

## **Exploring the Traditional Use of Fire in the Coastal Mountains of Central California: Environmental History of the Pinnacles National Park Bottomlands**

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### **i. Introduction and Physical Description**

The following narrative describes the history of a small area in the interior mountains of California's South Coast Ranges. Its purpose is to provide a context for understanding the human use and management of this landscape through successive prehistoric (pre-European) and historic periods, as well as the consequences of these activities on the physical environment. Particular emphasis is given to the human application of fire and its role in effecting landscape-scale changes, or in maintaining specific landscape characteristics over time. The narrative is divided into four parts (in addition to the introduction). Each of the first three parts describes a distinct culture, or group of related cultures, associated with the study area, beginning with the indigenous peoples prior to European contact, then Hispanic colonists under both Spanish and Mexican governments, and finally American settlers under the political authority of the United States. The last section, which serves as conclusion, describes the environmental consequences which each of these cultures likely had on the study area.

The subject of the first section of the historical narrative is somewhat asymmetrical in scope, since it represents at least five thousand years of known human occupation, versus less than eighty years for the Hispanic period, and a little over one hundred and fifty for the American. Even with emphasis given to the Chalon—the culture present at the time of European contact—this period still spans more than five centuries. Over such a long period of time, we can assume that considerable cultural change has occurred, and the people who inhabited this region in the eighteenth century may only distantly resemble the people who inhabited it several centuries earlier. Land use practices and associated economic consequences would have changed as well. However, most of what we presently know about the Chalon represents only a relatively brief moment from around the time of European contact. It does not reflect the full range and depth of their dynamic (and still evolving) history. Given the considerable duration of this history, we can assume that the cumulative impact of the Chalon and their ancestors (or predecessors) was significant, even if short-term, local impacts may have been relatively slight (though even this is far from certain, given that the Chalon were capable of landscape-scale manipulation through practices such as burning). The land use practices of subsequent European and Euro-American settlers were far more intensive than indigenous practices and have produced readily-apparent changes on the land, but this intensity should be weighed against the brevity of its duration. A sustained low-intensity land use regime lasting for thousands of years, such as that represented by the indigenous inhabitants, may have done as much to shape the landscape as the high-intensity impacts of the last two hundred.

The geographical scope of this study—the study area—lies at the southern end of Bear Valley within the eastern boundaries of Pinnacles National Park in San Benito County, California. This portion of Bear Valley is commonly known as the Bottomlands by park staff and is referred to here as the Pinnacles Bottomlands. It is located approximately 225 kilometers south of San Francisco and about 80 kilometers east (inland) of Monterey. Although Bear Valley lies adjacent to the upper San Benito River, it is actually part of the Salinas River watershed. The small stream which drains it flows south through the Pinnacles Bottomlands to Chalone Creek, which then continues through a series of narrow canyons in the Gabilan Mountains to join the Salinas River near the town of Greenfield. The Gabilan Mountains, which Pinnacles National Park straddles, are one of a series of mountain ranges which comprise the southern half of California's Central Coast Range. For the sake of clarity, these mountains are referred to here as the South Coast Range, a convention used by some archeologists to distinguish this region from the northern

half of the Central Coast Range—the North Coast Range—which lie north of San Francisco Bay.<sup>1</sup> Although the Gabilan Mountains are part of this coastal system, they lie within the rain shadow of the taller Santa Lucia Mountains further to the west, and consequently have a relatively arid, interior climate. The average annual rainfall of Bear Valley is approximately 46 centimeters (about 18 inches). This low precipitation and the rugged terrain of the interior mountains have been major factors conditioning patterns of human occupation in both prehistoric and historic times, supporting lower population densities than more accessible and resource-rich locations further to the west and to the north around San Francisco Bay.

### I. The Indigenous Context

At the beginning of European colonization in 1769, the Native peoples who occupied the vicinity in which the study area is located were the Chalon. They represented the southernmost branch of an ethnolinguistic group identified during the nineteenth century by anthropologists and known today as the Ohlone (Costanoan) people. Directly north of the Chalon within the lower San Benito River valley were the Mutsun, a separate branch of the Ohlone. Today, the descendents of these two peoples are represented by the Amah Mutsun Tribal Band (AMTB). Although some members of the Amah Mutsun may be descended from Chalon forebears, with whom the Mutsun are presumed to have had frequent contact in pre-modern times, the Chalon as a distinct people were believed to have become extinct by the end of the nineteenth century.<sup>2</sup> Only a few years ago, however, an anthropologist conducting genealogical research found that an organized band of Chalon descendents still exists in southern California, where survivors from Mission Soledad relocated during the Mexican era and were subsequently confused with the locally-indigenous Chumash. Over time, the memory this group's original identity as Chalon grew vague, and recent generations have assumed themselves to be Chumash without knowing otherwise. This group has now begun the daunting task of recovering surviving vestiges of its cultural history and has also stepped forward to re-establish some relationship with its ancestral homeland, which includes Pinnacles National Park. The park currently maintains active but informal relations with the Amah Mutsun Tribal Band and the Chalon descendents on the assumption that both modern groups possess a traditional association with park lands.

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The Ohlone were among the first California Indians to be encountered by the Spanish and subsequently missionized (along with the Kumeyaay in the south).<sup>3</sup> The Spanish referred to them as Costanoans, or "people of the coast," but the name Ohlone has been adopted in modern times and is preferred by many Indians because of its origin as a local place-name in one of the indigenous languages of the region.<sup>4</sup> The Ohlone occupied a broad territory which included all of the San Francisco Peninsula and the East Bay from the Carquinez Straits in the north to Big Sur on the southern coast. Inland, the

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<sup>1</sup> Randall Milliken, for example, much of whose research focuses on this region.

<sup>2</sup> Concerning relationship between Mutsun and Chalon in prehistoric times, see Randall Milliken, Laurence H. Shoup, and Beverly R. Ortiz, *Ohlone/Costanoan Indians of the San Francisco Peninsula and their Neighbors, Yesterday and Today* (Oakland, CA: Archaeological and Historical Consultants, 2009), pp. 66-67 on Social Interaction Spheres.

<sup>3</sup> The first two Spanish settlements in Alta California were established in 1769 at San Diego in the territory of the northern Kumeyaay (known to the Spanish as Diegueños), and at Monterey in the territory of the Rumsen branch of Ohlone.

<sup>4</sup> Not everyone considers the name Ohlone adequately comprehensive, since it is derived from the name of a single community—Oljon—located on the coast within San Mateo County. Concerning the problem of applying linguistic-based names for the prehistoric indigenous peoples of California, Milliken writes, "Neither Costanoan, nor Ohlonean, nor Ohlone are terms that California native peoples would have recognized at the time of Spanish settlement. The local tribes did not need language group names because they did not experience life at the language group scale." [Milliken, *Ohlone/Costanoan* (2009), p. 46.]

Ohlonean territory included most of the interior South Coastal Range to the western edge of the San Joaquin Valley, although pockets of older, unrelated peoples occupied the Salinas and upper Carmel River Valleys. Territory, however, is a misleading term in this context, because the people who lived here prior to European colonization would have acknowledged no formal unity within this extensive geographical area or any universal attachment to the region itself. The relationships they did acknowledge were centered around local communities occupying a relatively small and well-defined area. Each community possessed its own political and ceremonial leaders and was more-or-less autonomous. Members of these communities lived in one or more permanent villages but often moved seasonally between several smaller hamlets which were occupied only temporarily.<sup>5</sup>

University of California anthropologist Alfred Kroeber described these distinctive social units as tribelets based on his seminal study of the Patwin (southern Wintun) in northern California during the early twentieth century.<sup>6</sup> He described the typical tribelet as consisting of,

...several settlements—there might be three or four or five of them—sometimes more or less the same size, but more often one was dominant or permanent, the other more like suburbs of it. They might be situated some miles away. The smaller settlements were likely to be inhabited seasonally, or by certain families only perhaps for a stretch of years, after which their population might drift back to the main settlement.<sup>7</sup>

Kroeber considered this form of social and political organization nearly universal throughout the state, but recently some scholars have argued that the tribelet model is too generalized and that greater variety existed among California's indigenous peoples.<sup>8</sup> Although many fit Kroeber's model of semi-sedentary communities of villages within well-defined territorial boundaries, other peoples were organized more loosely. For example, the Washoe of the central Sierra Nevada or the Shoshone of the southern deserts rarely gathered in groups comprising more than a few families and moved seasonally across an extensive region with relatively fluid boundaries. The Ohlone peoples probably fell somewhere between this example and Kroeber's typical tribelet (though there were also significant variations among the Ohlone themselves).<sup>9</sup>

Like the Washoe and the Shoshone, most Ohlone tribelets moved about frequently in order to take advantage of seasonally-available resources, but unlike those desert peoples, the Ohlones' movements were confined within fixed territories with strictly-defined geographical boundaries. These were typically small, comprising no more than 150 square miles—or about a day's walk from end to end—but encompassing all or most of the diverse resources a community needed to sustain itself. Most Ohlone tribelets also possessed a corporate political structure under the authority of a single headman and other

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<sup>5</sup> Richard Levy, "Costanoan," in Robert F. Heizer, ed., *Handbook of North American Indians, Volume 8: California* (Washington, DC: Smithsonian Institution, 1978); and Gary S. Breschini, Trudy Haversat, and R. Paul Hampson, *Cultural Resources Overview of the Coast and Coast-Valley Study Areas* (Salinas, CA: Archaeological Consulting, 1983).

<sup>6</sup> Alfred L. Kroeber, "The Patwin and their Neighbors," *University of California Publications in American Archaeology and Ethnology* 29.4 (1932): 257-259.

<sup>7</sup> Alfred L. Kroeber, "The Nature of Land-holding Groups in Aboriginal California," in Dell H. Hymes and Robert F. Heizer, eds., "Two Papers on the Aboriginal Ethnography of California," *Reports of the University of California Archaeological Survey* 56 (1962): 33.

<sup>8</sup> Randall Milliken, *Ethnogeography of the South Coast Ranges, with Special Attention to Priest Valley, Monterey County* (Davis, CA: Far Western Anthropological Research Group, Inc., 2006), pp. 4-8.

<sup>9</sup> Milliken notes that the Chalon may have been organized in a manner more closely resembling a loose regional community than a strict tribelet, since no headman was identified in mission records. [Milliken, *Ethnogeography* (2006), pp. 10-11.] Writing in another essay about groups which have been identified through Spanish missionary records, Milliken observes that, "...some of the named groups may not have been tribelets. In some rugged areas with limited summer water supplies, people may have dispersed over the landscape in tiny hamlets. Under such circumstances each extended family in a group like the *Tayssens* [a Mutsun group in the Diablo Mountains just north of the Chalon] may have been entirely independent of any higher political authority." [Randall Milliken, "The Costanoan-Yokuts Language Boundary in the Contact Period," in Lowell J. Bean, ed., *The Ohlone, Past and Present: Native Americans of the San Francisco Bay Region* (Menlo Park, CA: Ballena Press, 1994), p. 178.]

ceremonial leaders which more-loosely organized groups did not share. Ohlone tribelets numbered as few as 50 persons to as many as 500 in more densely-populated areas. The larger tribelets would have comprised several permanent villages as well as numerous seasonal hamlets. These hamlets were located in the vicinity of a particular resource or group of resources and would have been occupied by members of the community only when it was time to harvest and process them. There were approximately 50 autonomous tribelets located throughout the region occupied by the Ohlone culture on the eve of the historic period.<sup>10</sup>

At the time Europeans first encountered them, the Ohlone numbered at least 10,000 individuals. Anthropologists from Kroeber on have grouped the Ohlone into eight ethnolinguistic branches. These reflect common or similar spoken languages and corresponded to broad areas in which the people would have been able to communicate easily among one another—and probably interacted to a greater extent—but they had little meaning to the prehistoric Ohlone themselves in terms of social or political identity, which remained centered in the smaller, territorial unit of the tribelet. The Chalon represented the southernmost ethnolinguistic branch of the Ohlone culture and were located furthest inland, confined almost entirely to the hill country of the upper San Benito River watershed and surrounding mountain ranges (including the Pinnacles in the Gabilan Mountains). The Chalon are believed to have totaled about 1,300 individuals at the end of the eighteenth century.<sup>11</sup> This population was distributed among six known tribelets—Chalon, Escoyzama, Zula, Ochentac, Milanistac, and Chapana. These names are recorded in the Spanish mission registers as the place of origin given by individuals when they entered a mission and probably represent principal villages, or clusters of villages, within each tribelet territory. The frequently-ambiguous use of the term Chalon to refer sometimes to the entire region and sometimes to an individual tribelet suggests that this place-name may have described the largest or most important village of the branch.<sup>12</sup> It was located on the east side of the Gabilans, though exactly where is not known. Directly north of the Chalon were the Mutsun, who were the most populous branch of the Ohlone culture, numbering more than 2,000 people in as many as ten tribelets. Most of this branch were concentrated in the rich San Juan Valley around the principal village of Mutsun (not far from where Mission San Juan Bautista was established). Although the Mutsun and Chalon were ethnolinguistically distinct, their languages were similar, and their close physical proximity suggests that they probably interacted through trade and marriage. The same may also have been true of the Rumsen Ohlone, whose territory bordered the Chalon at the western foot of the Gabilan Mountains in the lower Salinas River Valley (and extended to the coast from the Monterey Peninsula south to Big Sur). The remaining Ohlone branches all lay further to the north—the Awaswas on the northern shore of Monterey Bay and the Santa Cruz coast, the Tamyen in the Santa Clara Valley and surrounding hills, the Ramaytush on the San Francisco peninsula, the Chochenyo in the East Bay, and the Karkin along the southern shore of the Carquinez Straits. Their geographical distance, as well as the pronounced cultural differences which existed between these groups and the southern Ohlone branches by the time of European contact indicates that they probably did not interact very closely.<sup>13</sup>

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It would be a mistake to think of these people and this region strictly in terms of how they appeared at the moment Europeans first encountered them, though a mistake which has often been made.<sup>14</sup> This gives the false impression that indigenous California possessed a fixed identity without history or change over time, or that the same people lived here through all prehistory, but there is ample

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<sup>10</sup> Levy, "Costanoan" (1978); and Millikan, *Ethnogeography* (2006).

<sup>11</sup> Richard Levy estimated 900. [Levy "Costanoan" (1978), p. 485.] Extrapolating from baptismal entries in the Spanish mission records, Randall Milliken estimated 1,338. [Millikan et al., *Ohlone/Costanoan* (2009), p. 64.]

<sup>12</sup> Milliken, *Ethnogeography* (2006), pp. 10-11.

<sup>13</sup> Millikan et al., *Ohlone/Costanoan* (2009), pp. 83-85.

<sup>14</sup> Beginning with Alfred Kroeber's memory culture methodology, which set an early precedent for anthropological studies in California. [Kent G. Lightfoot, *Indians, Missionaries, and Merchants: The Legacy of Colonial Encounters on the California Frontiers* (Berkeley: University of California Press, 2005), pp. 31ff.]

evidence to demonstrate that the history—or prehistory—of California and its pre-European inhabitants was dynamic as well as diverse. Archeological records for the South Coast Range—the broader region in which the study area is located—suggests great antiquity. The region contains some of the oldest recorded sites in California; for example, Diablo Canyon (CA-SLO-2) and Cross Creek (CA-SLO-1797), located in San Luis Obispo County just north of Point Conception. Both contain elements which demonstrate occupation as early as 10,000 years ago.<sup>15</sup> (Within California, only Daisy Cave on San Miguel Island has been dated earlier.) These sites indicate that the central California coast began to be settled very shortly after the warming which brought the last glacial period of the Pleistocene Epoch to an end and has been occupied by humans more-or-less continuously ever since. On the other hand, the interior mountains of the Coastal Range, where Pinnacles is located, have so far revealed no evidence of human occupation prior to about 3,500 BC, with intensive occupation of upland sites beginning somewhat later.<sup>16</sup> This is more than 5,000 years after the earliest coastal settlements and supports the belief of some archeologists that colonization of the central California region began on the coast and later moved inland.<sup>17</sup>

Based on linguistic evidence, the ancestors of the Ohlone are believed to have migrated into the San Francisco Bay region anywhere from 5,000 years ago (3000 BC) to as recently as 1,500 years ago (AD 500).<sup>18</sup> There is little consensus among scholars on the actual date, though all agree that the Ohlonean languages and cultural patterns represent a novel intrusion to the region relative to older languages and cultures.<sup>19</sup> Most scholars also agree that the ancestors of the modern Ohlone people arrived from the east in the interior of California, where they share a common ancestry with the Wintun and Maiduan peoples of the Sacramento Valley and northern foothills, the Miwok of the interior delta, and the Yokuts of the San Joaquin Valley. The languages of all these peoples are related through a common linguistic family somewhat controversially known as the Penutian stock.<sup>20</sup> Within this ancient family, the closest relative of the Ohlone languages are those spoken by the Miwok, the Ohlones' immediate neighbors to the north. (The Miwok also reside on the northern shores of the San Francisco Bay.) This suggests that the Ohlone and Miwok diverged from one another at a more recent date than the other Penutian speakers, leading some scholars to conjecture that Ohlone and Miwok ancestors migrated together into the coastal region prior to being separated.<sup>21</sup> Because of their similarity and common origin, the Ohlone and Miwok languages are often described collectively as Utian. A slightly more distant relationship exists

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<sup>15</sup> Terry L. Jones, et al., "The Central Coast: A Midlatitude Milieu," in Terry L. Jones and Kathryn A. Klar, eds., *California Prehistory: Colonization, Culture, and Complexity* (Lanham, MD: Altamira Press, 2007). See sources referenced by Jones, p. 133. For Diablo Canyon, note especially pioneering work of Roberta Greenwood (1972).

<sup>16</sup> Mark G. Hylkema, "Some Perspectives on Upland Settlement Patterns of the Central Diablo Range of California," *Proceedings of the Society for California Archaeology* 6 (1993): 99-119.

<sup>17</sup> However, this assumption is based on known sites and may reflect a bias toward the preponderance of research itself, which is typically concentrated around modern coastal development. [Jones et al., "Central Coast" (2007), p. 141.] Note, also, that it refers to the earliest colonization events and not to later movements of people, such as the presumed Utian migrations of the Middle or Late Periods.

<sup>18</sup> James A. Bennyhoff, "Central California Augustine: Implications for Northern California Archaeology," in James A. Bennyhoff, David A. Fredrickson, and Richard E. Hughes, eds., *Toward a New Taxonomic Framework for Central California Archaeology* (Berkeley: University of California, Archaeological Research Facility, 1994); Gary S. Breschini, *Models of Population Movements in Central California Prehistory* (Salinas, CA: Coyote Press, 1983); and Levy "Costanoan" (1978). Levy proposes the most recent date.

<sup>19</sup> Nor do all scholars agree that this linguistic intrusion necessarily came about as the result of an epic *Folkwanderung*. Archeologist Stephen Silliman reminds us that language can be spread without mass movements of people and notes that Native Californians themselves have no tradition of such migrations. [Stephen W. Silliman, "Linguistic Archaeology and the Use of Ethnolinguistic Boundaries," *Proceedings of the Society for California Archaeology* 9 (1996): 14.]

<sup>20</sup> Scott DeLancey and Victor Golla, "The Penutian Hypothesis: Retrospect and Prospect," *International Journal of American Linguistics* 63.1 (1997): 171-202; and Victor Golla, "Linguistic Prehistory," in Terry L. Jones and Kathryn A. Klar, eds., *California Prehistory: Colonization, Culture, and Complexity* (Lanham, MD: Altamira Press, 2007).

<sup>21</sup> Golla, "Linguistic Prehistory" (2007), p. 76.

between the Ohlone languages and those of the Yokuts of the San Joaquin Valley, suggesting that these ancestors diverged prior to the Ohlone and Miwok migrations coastward.<sup>22</sup> (The distant relationship between these languages, and presumably cultural similarities as well, may have facilitated later interactions across the Diablo Mountains between the southern Ohlone tribelets and the Yokuts of the interior San Joaquin Valley.)<sup>23</sup> The culturally-distinct Esselen and Salinans to the south of the Ohlone spoke languages which descended from an unrelated stock known as Hokan. Based on the antiquity of these languages relative to the Utian languages, linguistic anthropologists have proposed that Hokan speakers predated the arrival of the Ohlone to the central coast region, and may in fact be its original inhabitants (unless their ancestors displaced an even older group which has left no discernible linguistic trace). The Esselen and Salinans, who resided directly west and south of the Chalon within the upper Salinas River Valley, are the only surviving remnant of these Hokan speakers in the South Coast Ranges, occupying territory which apparently lay beyond the frontier of Late Holocene Utian expansion.<sup>24</sup> These Utian immigrants probably did not actually displace their Hokan predecessors but absorbed and were integrated with them over a period of time during which the two groups coexisted within the same or contiguous regions.<sup>25</sup> The Ohlone culture which later evolved in the aftermath of these migrations was most likely a synthesis of both Hokan and Utian elements, which some scholars believe is represented by the emergence of distinct cultural patterns in the archeological record.<sup>26</sup>

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Working somewhat independently of linguistic anthropologists, archeologists have developed their own chronologies—known as culture sequences or histories—based on material artifacts such as bead types, stones implements, and mortuary deposits. The most basic of these sequences for west central California divides the latter half of the Holocene Epoch into Early, Middle, and Late Periods, with shorter transitional periods inserted between each broad unit of time.<sup>27</sup> (This sequence is derived from observed technological and stylistic changes in shell bead design.) The Early Period begins ca. 3500 BC and extends to ca. 500 BC. The Middle Period extends from ca. 500 BC to ca. AD 1000, and the Late Period extends from ca. AD 1000 up to the time of European settlement in 1769. A later variant on this scheme, using a slightly different nomenclature, divides the entire Holocene into Lower, Middle, and Upper Archaic Periods, culminating with the Emergent Period on the cusp of European contact.<sup>28</sup> The

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<sup>22</sup> Catherine A. Callaghan, "Evidence for Yok-Utian," *International Journal of American Linguistics* 63.1 (1997): 18-64.

<sup>23</sup> Milliken, *Ohlone/Costanoan* (2009), p. 83; and Milliken, "Costanoan-Yokuts" (1994), p. 178.

<sup>24</sup> The Pomo represent an analogous remnant in the North Coast Ranges. [Golla, "Linguistic Prehistory" (2007), pp. 78-79.]

<sup>25</sup> Breschini, *Population Movements* (1983), pp. 75-80.

<sup>26</sup> Archeologist Michael Moratto, for examples writes that the appearance of the Berkeley Pattern in the San Francisco Bay Area was the result of Utian influence. [Michael J. Moratto, *California Archaeology* (Orlando, FL: Academic Press, 1984), p. 553.] But, as Milliken warns, "there is no assurance that archaeological pattern changes, even when well-dated and well-documented, co-occurred with language group movements." [Milliken, *Ohlone/Costanoan* (2009), p. 82.] And not all postulated dates for the Utian migration correspond well with prominent markers in the archeological record.

<sup>27</sup> Randall Milliken, et al., "Punctuated Culture Change in the San Francisco Bay Area," in Terry L. Jones and Kathryn A. Klar, eds., *California Prehistory: Colonization, Culture, and Complexity* (Lanham, MD: Altamira Press, 2007), pp. 101ff. This nomenclature was systematized by Richard K. Beardsley but was originally proposed by Jeremiah Lillard, Robert Heizer, and Franklin Fenenga in 1939. [Richard K. Beardsley, *Temporal and Areal Relationships in Central California Archaeology*, 2 Vols. (Berkeley: University of California Archaeological Survey, Dept. of Anthropology, 1954); and Jeremiah Lillard, Robert Heizer, and Franklin Fenenga, *An Introduction to the Archeology of Central California* (Sacramento, CA: Sacramento Junior College, Dept. of Anthropology, 1939).]

<sup>28</sup> Milliken et al., "Punctuated Culture Change" (2007), pp. 101ff; and Milliken, *Ohlone/Costanoan* (2009), p. 73. This nomenclature originated with archeologist David Allen Fredrickson, who used the term "emergent" to describe a complex hunter-gatherer society "emerging" into a proto-agricultural one. [David Allen Fredrickson, "Early Cultures of the North Coast of the North Coast Ranges, California," Ph.d. diss., University of California,

earliest evidence of human presence in California, associated with the terminal Pleistocene-early Holocene transition, is included as a brief Paleo-Indian Period immediately preceding the Lower Archaic. This sequence attempts to describe distinct economic periods, rather than strictly stylistic changes in artifacts, though each period is understood based on the material assemblages which reflect the dominant economic activities thought to characterize it. Both systems are generalizations and must be adapted to specific local regions depending on the material assemblages found in them.

Within the last few decades archeologists have accumulated enough evidence to construct a comprehensive culture sequence for the South Coast Ranges of central California where Pinnacles and the study area are located.<sup>29</sup> The need for a separate chronology here results from differences which began to emerge between the San Francisco Bay area and the South Coast Range about 3500 BC at the beginning of the Early Period. Prior to this, the material record in both places was nearly identical, reflecting relatively homogenous cultural development across the entire region. This pan-regional culture was characterized by a millingstone technology which utilized stone slabs to process the hard seeds of grasses and small forbs into flour. The Millingstone Culture, as it was named after the preponderance of these artifacts, is thought to have practiced a mobile foraging economy, in which small groups or communities moved seasonally from one resource site to another, harvesting and consuming only what they needed rather than collecting a surplus and storing it for future use. Typical of this pattern, the Millingstone Culture has left few large village sites or dense artifact deposits which would be associated with a more sedentary lifestyle. The Millingstone pattern began to change with the advent of the Early Period around 3500 BC. This transition appeared first on the San Francisco Bay, where the older Millingstone technologies were abruptly supplanted by mortars and pestles. These tools were better-adapted for milling acorns and buckeyes, and archeologists believe their appearance demonstrates a new emphasis on these large but labor-intensive seeds and may reflect the emergence of a less mobile economy with more time to spend in processing and storing its food sources. Greater cultural complexity is also suggested by the appearance of wealth items, such as cut and shaped shell beads, while evidence of a more sedentary lifestyle appears with permanent village sites and the accumulation of large middens. This new cultural pattern is thought to reflect a shift toward a collector economy, in which resources are gathered in large quantities and then transported to a central location (such as a permanent village), where they are processed and stored. Such resource intensification is often associated with a growing population density and the resulting increase in competition for finite resources, but in this case it may also have been associated with new groups of people migrating into the San Francisco Bay Area. At least some linguistic models correlate this new cultural pattern with the earliest appearance of the Utian languages, suggesting that the Early Period transition may have marked the entrance of the Ohlones' ancestors to the region.<sup>30</sup>

South of the Bay Area, the new cultural patterns exerted less influence. Mortars and pestles began to appear but only occasionally, while the older Millingstone technologies remained far more prevalent, suggesting that people here continued to live as mobile foragers even after the transition to the Early Period. In fact, this pattern would continue through the entire Middle Period as well, and it was not until sometime in the Late Period, possibly as late as AD 1400, that a more sedentary collector pattern began to appear in the South Coast Ranges and around Monterey Bay.<sup>31</sup> The Early and Middle Periods in

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Davis, 1973.] However, the implicit notion that agriculture represents the only higher or more complex stage of cultural evolution is challenged by some scholars, for example, by Kent Lightfoot. [e.g., Lightfoot, *California Indians* (2009), pp. 131-132.]

<sup>29</sup> The proposed culture sequence for the South Coast Ranges begins with a poorly-defined Paleo-Indian Period—to reflect some Clovis-style isolates found near Point Conception—followed by an Early Archaic/Millingstone Period which extends from ca. 8000 BC to ca. 3500 BC. This is followed by an Early Period from ca. 3500 BC to ca. 600 BC, a Middle Period from ca. 600 BC to ca. AD 1000, and a Late Period extending up to European settlement in AD 1769, with a distinctive Middle-to-Late Transition occurring between ca. AD 1000 and ca. AD 1250, and possibly later in some local areas. [Jones, et al., "The Central Coast" (2007), pp. 134-140.]

<sup>30</sup> Jones, et al., "The Central Coast" (2007).

<sup>31</sup> Milliken, *Ohlone/Costanoan* (2009), p. 73-74; and Terry L. Jones and Jennifer A. Ferneau, "Deintensification Along the Central Coast," in Jon M. Erlandson and Terry L. Jones, eds., *Catalysts to Complexity: Late Holocene*

the south were also characterized by the appearance of distinctive stone points which indicated a greater reliance on large game animals. (A similar pattern has been identified for this time period in southern California.) This has led some archeologists to refer to the Early and Middle Periods in these regions collectively as the Hunting Culture.<sup>32</sup> Although the Millingstone Culture which preceded it also hunted, it relied to a greater degree on small animals, which would have been taken with snares and other types of traps rather than stone-tipped projectiles and spears. The persistence of these mobile patterns in the south relative to the north, as well as their affinity with similar patterns in southern California, though possibly due to a variety of factors seems consistent with the presumed gradual migration of an intrusive Utian (or proto-Utian) culture beginning in the San Francisco Bay Area and moving southward. The increasing prevalence of mobile foraging patterns to the south would be associated with older Hokan groups furthest from the wellspring of the Utian migration in the north. Environmental factors also may have contributed to make the northern patterns less desirable in a southern context, slowing or even arresting their dissemination in that direction. For example, the presumed origins of the Utian migration from within the Sacramento-San Joaquin River Delta would have made the Utian cultures better-adapted to a wetlands-oriented economy, at least at first. As a result, they may have preferred the estuarine marshes around the San Francisco Bay to the oak savannah and chaparral uplands of the South Coast Ranges, with which the established Hokan cultures were more familiar.<sup>33</sup> The San Francisco Bay also simply had more available resources and could better support a denser population with a sedentary, village-oriented lifestyle.

The Late Period, which began with a transitional phase lasting from about AD 1000 to about AD 1250, represented a period of profound change for all regions in west central California, though again, the experience in the southern half of the Ohlone culture area relative to the north was vastly different.<sup>34</sup> This final period has unique historical interest because scholars believe that the cultures which the Spanish first encountered in the eighteenth century developed during this millennium. During this time, the northern Ohlone groups on San Francisco Bay participated in a remarkably widespread cultural efflorescence which also included many distantly-related (and some unrelated) groups north of them. Following an initial period of transition lasting just under three centuries, the distinctive Augustine cultural pattern emerged throughout the entire San Francisco Bay Area and much of the Sacramento Valley and North Coast Ranges. It was characterized by a higher degree of cultural complexity with increased social stratification and craft specialization as well as the emergence of greater political and ceremonial organization (for example, the appearance of the "Kuksu" secret society). New technologies were also introduced or adopted, the most important of which was the bow and arrow.<sup>35</sup>

The South Coast Range and Monterey Bay Area remained surprisingly unaffected by these events happening to the north, suggesting an isolation all the more remarkable given the relatively close ethnolinguistic relationship between the southern Ohlone tribelets and their northern cousins. This relationship was much closer than that between the San Francisco Bay Ohlone and the peoples of the North Bay and North Coast Ranges with whom they shared in the Augustine culture. Some scholars have argued that the Middle Period ended in the south with a collapse in the population and the abandonment of many settled areas, resulting in a period of social turmoil or stagnation that lasted for several centuries

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*Societies of the California Coast* (Los Angeles: University of California, Cotsen Institute of Archaeology, 2002). Although Jones and Ferneau accept that a more collector-oriented pattern existed in this region by the latter centuries of the Late Period, they insist that life here also included a great deal of seasonal mobility, an assertion which they tie to their central premise of deintensification.

<sup>32</sup> Jones, et al., "The Central Coast" (2007), pp. 138-140. The Hunting Culture concept originated with archeologist David Banks Rogers in 1929 to describe a characteristic pattern which he identified in the coastal region of Southern California. It was later applied to the Central Coast as well, where a similar pattern was identified. [David Banks Rogers, *Prehistoric Man of the Santa Barbara Coast* (Santa Barbara, CA: Santa Barbara Museum of Natural History, 1929).]

<sup>33</sup> Moratto, *California Archaeology* (1984), p. 553.

<sup>34</sup> Milliken, *Ohlone/Costanoan* (2009), pp. 70-85.

<sup>35</sup> Milliken, *Ohlone/Costanoan* (2009); Milliken et al., "Punctuated Culture Change" (2007); and Jones et al., "Central Coast" (2007).



and delayed further cultural development or the acceptance of outside influences until well into the Late Period.<sup>36</sup> This collapse may have been exacerbated by—if not actually the result of—an extended period of severe drought associated with the Medieval Climatic Anomaly, a warming of the climate which roughly coincided with the Middle-Late Transition Period. These environmental factors may also explain at least some of the developments in the north, where they might have stimulated migrations from the interior, bringing new technologies and cultural patterns to the coast, but evidence from around the San Francisco Bay shows no decline in population or the sort of social collapse postulated for the southern region. By about AD 1400 evidence of new cultural patterns begins to appear in the south (expressed by the Rancho San Carlos Phase on the coast around Monterey Bay and the Panoche Phase in the interior mountain ranges). Although these now include new elements which indicate an incipient collector economy with a greater degree of sedentism (permanent villages), there remains little evidence of cultural exchange with the northern Ohlone tribelets, and the southern Ohlone never seem to have participated in the Augustine cultural pattern. Even the bow and arrow, which finally appears about this time, arrives from southern California rather than from the north.<sup>37</sup>

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The earliest known evidence of human occupation of the interior south coast ranges dates to about AD 3200. This is based on work done in the 1960s by W.H. Olsen and L.A. Payen, who proposed a distinct phase of culture history for this region.<sup>38</sup> Olsen and Payen identified the oldest phase of this culture history as the Positas Complex, which roughly corresponds with the emergence of the broader Hunting Culture at the beginning of the Early Period in other parts of California. Neither they nor other archeologists have found evidence of earlier Millingstone Culture patterns in the interior mountains, which suggests that the people associated with the Positas Complex may have been the original colonizers of this region (though, given the inadequate coverage of archeological surveys throughout the region, all that can be said for certain is that sites which have been investigated were not occupied prior to about 3200 BC). Positas was superseded in less than a thousand years by the Pacheco Complex, which would extend, in two distinct phases (Pacheco B and Pacheco A), for the remainder of the Early Period and much of the Middle. When first proposed, it was thought that this cultural phase ended about 400 AD, but subsequent investigations have extended the Pacheco Complex to about 950 AD, making its terminal date nearly coincident with the transition from Middle to Late Periods expressed elsewhere in west central California.<sup>39</sup>

The types of implements associated with the Pacheco Complex suggest that these upland people hunted large mammals ranging in size from deer and antelope to elk and even bear. These animals were dispatched using spears which were either wielded by hand or thrown with an atlatl. (The bow and arrow was not introduced until later.) At the same time, the Pacheco Complex also reflected widespread utilization of acorns in addition to the small, hard seeds of grasses and forbs which had once constituted the dominant vegetal element of the Millingstone Culture. Archeologist Mark Hylkema proposes the following interpretation based on this evidence,

The association of a well developed hunting technology along with intensive acorn processing presents an interesting relationship that may reflect a pattern of seasonal elk

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<sup>36</sup> Jones and Ferneau, "Deintensification" (2002). See also Milliken, *Ohlone/Costanoan* (2009), p. 74.

<sup>37</sup> Milliken, *Ohlone/Costanoan* (2009), pp. 73-74; Terry L. Jones and Douglas J. Kennett, "Late Holocene Sea Temperatures Along the Central California Coast," *Quaternary Research* 51 (1999): 74-82; and Jones and Ferneau, "Deintensification" (2002).

<sup>38</sup> W.H. Olsen and L.A. Payen, *Archeology of the Little Panoche Reservoir, Fresno County, California: Archeological Report No. 11* (Sacramento: California Dept. of Parks and Recreation, 1968). Olsen and Payen also conducted one of the earliest archeological surveys of Pinnacles National Monument around the same time. [W.H. Olsen and L.A. Payen, *An Archeological Survey of Pinnacles National Monument, San Benito County, California* (Sacramento: Central California Archeological Foundation, 1967).]

<sup>39</sup> Jones, et al., "The Central Coast" (2007), p. 134; and Hylkema, "Upland Settlement Patterns" (1993), pp. 117-118.

migration to the uplands at a time coinciding with the ripening of acorns. ... During the fall when acorns cover the ground below the oak trees both elk and people probably converged. No doubt the elk were also after the acorns and the numerous canyon bottoms provided excellent passages for prehistoric game drives. This pattern of seasonal elk migration and human exploitation was probably repeated all over the coast ranges and accounts for the similarities between the coastal assemblages and the Diablo Range assemblages during the Pacheco Complex times.<sup>40</sup>

According to this scenario, the upland hill country would have been utilized on a seasonal basis by people exploiting resources which were available only at particular times of the year. As Hylkema also points out, the extent and diversity of these artifact assemblages indicate that these people were not nomadic but occupied a fixed territory within which they must have returned to the same sites repeatedly over a long period of time. Although this territoriality is characteristic of the collector economies of Late Period tribelets, the absence of permanent villages or other long-term residential sites suggests that the Pacheco Culture remained primarily a foraging economy.

The Pacheco Complex came to an end sometime around 950 AD and was superseded by a period archeologists consider transitional, during which dramatic changes appear to have taken place throughout the entire central coast region. Settlement patterns were disrupted, with many existing occupation sites abandoned and new ones adopted. New cultural patterns become evident with changes in the design of beads and stone implements as well as burial practices. And new technologies were introduced or adopted. In the interior mountains, this transitional period has been identified as the Gonzaga Complex. It lasted until about 1500 AD, when it was superseded by the Panoche, the last indigenous cultural complex in the interior mountains prior to European settlement. The Panoche Complex corresponds to the Late Period for the Central Coast region. (It has also been described as the Emergent Period for other parts of California.) In the south coast ranges, the transition to the Late Period was characterized by a less intensive reliance on upland resources and the establishment of larger habitation sites concentrated in lower elevation settings.<sup>41</sup> This has been interpreted as marking the emergence of an incipient collector economy in the region.<sup>42</sup>

Scholars continue to debate the reason for the dramatic changes associated with the Late Period without agreeing on a single cause. Evidence of economic intensification—for example, reliance on more labor-intensive food sources—and increased cultural complexity suggest denser populations, but linear population growth alone seems inadequate to explain many of the changes which occurred, such as the abandonment of numerous villages, especially south of the San Francisco Bay Area. Some archeologists now believe there may have been multiple interrelated factors, as Terry L. Jones et al. write, "...developments during the Late Period are seen as partially related to demographics but more to historic events—particularly arrival of the bow and arrow, European diseases, anomalously severe droughts, and/or the emergence of powerful leaders who benefited from the state of flux associated with the end of the Hunting Culture."<sup>43</sup> According to this reasoning, environmental factors such as extended droughts associated with the Medieval Climatic Anomaly might have reduced resource availability at the same time that greater demands were being made from a growing population and increasingly complex culture. (The latter may have necessitated greater accumulations of resource wealth for ceremonial purposes and to reinforce the status of powerful leaders.) New technologies like the bow and arrow would have facilitated the harvesting of animal resources to meet these growing needs but may also have led to overharvesting and the eventual diminishment of the animal populations. Some scholars have suggested that this combination of climatic stress and overharvesting depressed Late Period human populations relative to the terminal Middle Period and resulted in a "deintensification" of economic activity.<sup>44</sup> Other scholars have suggested that epidemic diseases introduced by visiting European mariners as early as the

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<sup>40</sup> Hylkema, "Upland Settlement Patterns" (1993), p. 117.

<sup>41</sup> Hylkema, "Upland Settlement Patterns" (1993), p. 118; and Jones, et al., "The Central Coast" (2007), p. 134.

<sup>42</sup> Milliken, *Ohlone/Costanoan* (2009): p. 74.

<sup>43</sup> Jones, et al. "The Central Coast" (2007), p. 145.

<sup>44</sup> Jones, et al., "The Central Coast" (2007), p. 144; and Jones and Ferneau, "Deintensification" (2002).

mid-sixteenth century may have further reduced indigenous populations during the Late Period.<sup>45</sup> Circumstantial evidence exists to support all of these theories, but further research will be needed to develop a fuller understanding of the chronology and magnitude, as well as the geographical scope, of the events themselves. If this theory of Late Period deintensification and population decline proves correct, it challenges the widespread assumption that coastal California at the time of European contact represented "the pinnacle of prehistoric population density, sociopolitical complexity, and subsistence intensity."<sup>46</sup> Instead, the indigenous societies which Spanish colonists first encountered in 1769 may have already been considerably diminished, at least in size, after more than two centuries of turmoil. Possibly they were just beginning to rebound when they were confronted by an even greater challenge with the European colonial enterprise.

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Based largely on ethnographic evidence, all of the indigenous peoples of the central California coast, including the Chalon of the interior coastal mountains, are known to have utilized a remarkable number of both plant and animal resources. Although a few items were considered primary staples—acorns, for example, and certain large mammals—the California Indians did not rely on them with the same nearly-exclusive intensity as other North American Indians relied on staples such as salmon in the Pacific Northwest, corn in the Southwest, or bison on the Great Plains.<sup>47</sup> Instead, they practiced a broad spectrum economy in which the burden of subsistence was shared across a wide range of resources. Not only did this diversity add interest to the indigenous diet, it provided relative stability over time by ensuring that some resources could always be found even when a principal or preferred resource was unavailable. This was helpful given the variability of prime staples such as the acorn, which may only be abundant once every few years, but it could prove to be a critical strategy for surviving larger-scale climatic variability. The central California coast is subject to periodic changes in weather patterns associated with the El Niño Southern Oscillation (ENSO). These events, which can occur as often as every few decades, bring warmer ocean temperatures, resulting in lower marine productivity and higher terrestrial rainfall, but often followed by periods of drought. Normal subsistence strategies can be substantially disrupted by these short-term climate variations, making it crucial to have alternative resources to fall back on.<sup>48</sup>

The various Ohlone peoples are estimated to have used routinely at least 150 species of plants—and possibly many more—for food, medicine and fiber.<sup>49</sup> The Chalon may have utilized somewhat fewer species, since they possessed a more limited resource base overall but appear to have been practicing a similar broad spectrum subsistence strategy by the end of the Late Period when the Spanish first

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<sup>45</sup> Jon M. Erlandson and Kevin Bartoy, "Cabrillo, the Chumash, and Old World Diseases," *Journal of California and Great Basin Anthropology* 17.2 (1995): 153-173; Jon M. Erlandson and Kevin Bartoy, "Protohistoric California: Paradise or Pandemic?" *Proceedings of the Society for California Archaeology* 9 (1996): 304-309; William Preston, "Serpent in the Garden: Environmental Change in Colonial California," *California History* 76.2-3 (1997): 260-298; and William Preston, "Post-Columbian Wildlife Irruptions in California: Implications for Cultural and Environmental Understanding," in Charles E. Kay and Randy T. Simmons, eds., *Wilderness and Political Ecology: Aboriginal Influences and the Original State of Nature* (Salt Lake City: University of Utah Press, 2002).

<sup>46</sup> Jones et al. "The Central Coast" (2007), p. 144.

<sup>47</sup> Eric Wohlgemuth, "Resource Intensification in Prehistoric Central California: Evidence from Archaeobotanical Data," *Journal of California and Great Basin Anthropology* 18.1 (1996): 98.

<sup>48</sup> Harold Gilliam, *Weather of the San Francisco Bay Region*, 2nd. Ed. (Berkeley: University of California Press, California Natural History Guides, 2002 [orig. 1962]); Jones and Ferneau, "Deintensification" (2002), pp. 207-208; and Jones and Kennett, "Late Holocene Climate Change" (1999), pp. 74-82. On variability in acorn abundance, see Helen McCarthy, "Managing Oaks and the Acorn Crop," in Thomas A. Blackburn and Kat Anderson, eds., *Before the Wilderness: Environmental Management by Native Californians* (Menlo Park, CA: Ballena Press, 1993); and Glenn Keator, *The Life of an Oak: An Intimate Portrait* (Berkeley, CA: Heyday Books, 1998).

<sup>49</sup> Barbara R. Bocek, "Ethnobotany of Costanoan Indians, California, Based on Collections by John P. Harrington," *Economic Botany* 38.2 (1984): 240.

encountered them. This would have included hard seeds obtained from grasses, annual forbs, and shrubs; the bulbs and corms of various geophytes; and the soft, meaty flesh of acorns, buckeyes, and pinenuts. Although site-specific archeobotanical data have not been collected from within the Chalon culture area, some of the commonly-harvested species can be inferred from historical documents and contextual evidence derived from better-documented neighbors. These resources would have included the seeds of perennial grasses where they occurred as well as those of annual forbs like tarweed (*Hemizonia* spp.), redmaids (*Calandrinia ciliata*) and chia (*Salvia columbariae*). The latter is one of the most frequently-mentioned Indian food sources in early Spanish accounts, where it is described as a staple among all of the coastal tribes south of Santa Barbara. It may have been less important further north but was still utilized here. Edible hard seeds would also have been obtained from several chaparral shrubs such as manzanita (*Arctostaphylos* spp.) and holly-leaf cherry (*Prunus ilicifolium*). Geophytes would have included brodiaeas (*Brodiaea* spp.), blue dicks (*Dichelostemma capitatum*), and a multitude of onions (*Allium* spp.). The most important plant carbohydrates would have been obtained from the acorns of locally-abundant valley oaks (*Quercus lobata*) and blue oaks (*Q. douglasii*), and the large nut of the buckeye tree (*Aesculus californica*), while pinenuts were collected from the grey pine (*Pinus sabiniana*) in the vicinity of Pinnacles and the ponderosa (*P. ponderosa*) and Jeffrey pine (*P. jeffreyi*) further east in the Diablo Mountains.<sup>50</sup>

The Chalon would have supplemented these (and other) plant resources with animal proteins from a wide range of species. These included small mammals such as rabbits (*Sylvilagus audubonii* and *Lepus californicus*) and ground squirrels (*Spermophilus beecheyi*), which they likely snared, as well as large ungulates such as elk (*Cervus canadensis*), deer (*Odocoileus hemionis*), and antelope (*Antilocapra americana*), which they would have hunted with stone-tipped projectiles, including the bow and arrow, a relatively new technology which first appeared during the Late Period.<sup>51</sup> Research from the northern part of the Ohlone culture area indicates an intensification in the harvest of large mammals such as elk and deer during the Late Period relative to smaller mammals, but scholars do not agree on the reasons for this apparent change.<sup>52</sup> Comparative analyses from other sites suggest that this pattern may not have been universal, and little evidence has yet been found to describe what took place within the Chalon culture area of the interior mountains. Ohlone groups which lived close to the sea or along San Francisco Bay also depended on marine resources—finfish, mollusks, seals and otters, and the occasional beached whale—but the land-locked Chalon probably relied more heavily on terrestrial animals. Whether or not they traded for marine resources from their coastal neighbors, or obtained permission to pass through their territories to access the coast, are questions which further archeological investigations may be able to answer.

Food was only one of many necessities derived from the natural resources of the land. Fiber was another. None of the Ohlone peoples manufactured clay vessels but instead wove basketry from plant materials. Clever designs and meticulous craftsmanship produced all types of containers which served both utilitarian and decorative purposes. Many different plants were employed in Ohlone basketry, but several which occur in the vicinity of the Pinnacles were especially important. These include deergrass

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<sup>50</sup> Richard A. Minnich, *California's Fading Wildflowers: Lost Legacy and Biological Invasions* (Berkeley: University of California Press, 2008); M. Kat Anderson, *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources* (Berkeley: University of California Press, 2005); and M. Kat Anderson, Michael G. Barbour, and Valerie Whitworth, "A World of Balance and Plenty: Land Plants, Animals, and Humans in a Pre-European California," *California History* 76.2-3 (1997): 12-47. Among the published primary sources relevant to this study area, the diaries of Juan Crespi in *A Description of Distant Roads: Original Journals of the First Expedition into California, 1769-1770*, trans. Alan K. Brown (San Diego: San Diego State University, 2001) is especially helpful.

<sup>51</sup> Milliken, et al., "Punctuated Culture Change" (2007), pp. 107-108.

<sup>52</sup> Archeologist Jack Broughton, for example, argues that this was an expression of the overexploitation of high-value resources and led to the subsequent collapse of the population responsible. [Jack M. Broughton, "Pre-Columbian Human Impact on California Vertebrates: Evidence from Old Bones and Implications for Wilderness Policy," in *Wilderness and Political Ecology: Aboriginal Influences and the Original State of Nature*, Charles E. Kay and Randy T. Simmons, eds. (Salt Lake City: University of Utah Press, 2002).]

(*Muhlenbergia rigens*), white-root sedge (*Carex barbarae*) and the young shoots of woody species like willow (*Salix* spp.).<sup>53</sup> Both deergrass and white-root sedge grow abundantly within the study area in McCabe Canyon and, to a lesser extent, other tributary canyons of Bear Valley. Medicine was another necessity obtained primarily from plant resources, and more than 100 medicinal uses were recorded within the broader Ohlone culture area by anthropologist John P. Harrington during the 1920s.<sup>54</sup> This is probably a conservative estimate, and it seems reasonable to assume that most plant species had some ethnobotanical significance to the various Ohlone peoples.

This broad spectrum economy which existed within the Chalon culture area at the time of European contact may not have been characteristic of the same area during earlier periods of occupation. As noted above, archeological evidence from the interior coast ranges suggest that a Hunting Culture pattern existed prior to the appearance of Late Period (Chalon) cultural patterns. This earlier culture probably focused on a more narrow range of resources which were exploited through a primarily foraging methodology. However, insufficient archeological evidence has been found in the local area to develop an accurate representation of these earlier cultural patterns. Where more extensive research has been conducted in other areas of west central California, evidence suggests a greater reliance on specific high-value resources such as acorns and large mammals. Only later does this economy begin to diversify to include a larger percentage of hard seeds from grasses and small forbs as well as hunting (or trapping) of smaller mammals.<sup>55</sup> The divergent histories which these two regions followed during the latter half of the Holocene makes it difficult to make generalized comparisons. Nevertheless, it is reasonable to assume that the broad spectrum economy described in ethnographic sources from the early historical period may have developed relatively recently in the south coast ranges following the emergence of an incipient collector pattern during the Late Period. In the interior coast ranges where the Chalon lived, this would have occurred during the Panoche Phase beginning about AD 1500, though it may have had roots originating in the long transitional period of the Gonzaga Phase, which began about AD 950.<sup>56</sup>

## II. European Contact and Colonization

European influence on coastal California began during the mid-sixteenth century with the arrival of Spanish mariners. The first of these was explorer Juan Rodriguez Cabrillo, who reached the southern coast of Alta (or Upper) California in 1542, where he lost his life after an accidental fall in the Channel Islands. (The expedition eventually continued as far north as Cape Mendocino under the command of Cabrillo's pilot, Bartolomé Ferrello.) Over the next two centuries numerous European ships passed along the coast of California. Beginning in 1565, (more than twenty years after Cabrillo's visit), Spain opened a trade route from its recently-acquired colony in the Philippines to the west coast of Mexico. Because of the prevailing currents and winds, these Manila Galleons had to sail a broad arc across the northern Pacific rather than coming directly to Mexico. They often made landfall in northern California and then followed the coastline south to Acapulco with the prevailing winds behind them. Between one and two galleons may have followed this route each year.<sup>57</sup> Many of the Ohlone tribelets, especially those whose territories lay directly on the coast, were among the first indigenous Californians to interact with these foreign visitors. Whether this early European influence touched the lives of interior communities like the

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<sup>53</sup> Michelle L. Stevens, "White Root (*Carex barbarae*)," *Fremontia* 32.4 (2004): 3-6; M. Kat Anderson, "The Ethnobotany of Deergrass, *Muhlenbergia rigens* (Poaceae): Its Uses and Fire Management by California Indian Tribes," *Economic Botany* 50.4 (1996): 409-422; and David W. Peri and Scott M. Patterson, "The Basket Is in the Roots, That's Where It Begins," in Thomas C. Blackburn and M. Kat Anderson, eds., *Before the Wilderness: Environmental Management by Native Californians* (Menlo Park, CA: Ballena Press, 1993).

<sup>54</sup> Bocek, "Ethnobotany of Costanoan Indians" (1984).

<sup>55</sup> E.g., by Eric Wohlgegemuth in the Pomo culture area north of San Francisco Bay.

<sup>56</sup> Hylkema, "Upland Settlement Patterns" (1993); Wohlgegemuth, "Resource Intensification" (1996); and Jones, et al., "The Central Coast" (2007).

<sup>57</sup> Iris H.W. Engstrand, "Seekers of the 'Northern Mystery': European Exploration of California and the Pacific," *California History* 76. 2 & 3 (1997): 78-110.

Chalon is impossible to say, but it is likely that the Chalon were at least aware of them through communication with their coastal neighbors.

Other Europeans to visit California included the English privateer Sir Francis Drake, who wintered with his vessel, the *Golden Hinde*, just north of San Francisco Bay in 1579; and Juan Rodriguez Cermeño, who wrecked a fully-laden galleon, the *San Augustin*, in the same location fifteen years later. In 1602, Sebastian Vizcaino led a small naval squadron up the coast as far as Cape Mendocino to explore potential harbors, though nothing would come of his efforts for another 150 years. All of these mariners stopped at convenient landing sites along the California coast to take on water and possibly to pasture livestock they carried with them.<sup>58</sup> Though brief in duration, these sojourns ashore left permanent marks on the landscape. At least three European weeds—curly dock (*Rumex crispus*), sow thistle (*Sonchus asper*), and filaree (*Erodium cicutarium*)—were introduced prior to permanent Spanish settlement in 1769, and may have arrived in the fur or hooves of animals carried aboard these ships.<sup>59</sup> The exotic introductions were localized around popular anchorages like San Diego, but at least one of them—filaree—was able to spread well beyond the area directly affected by the mariners and was often mistaken as a native species by later explorers who found it blanketing the landscape in places where no European had yet walked.<sup>60</sup> The other species do not appear to have migrated far beyond their point of origin. In the absence of other disturbances, these new plants may not have displaced native species or caused significant changes in the habitat they affected, but this is far from certain, especially in the case of filaree.<sup>61</sup>

A far more serious consequence of this early European contact with California was the possible exposure of its indigenous inhabitants to epidemic diseases. This remains conjectural but has been proposed in response to evidence suggesting that the native population of coastal California declined during the period between Cabrillo's initial landfall and the beginning of European settlement in 1769—that is, from the middle of the Late Period.<sup>62</sup> If this is true, the implications for the landscape may have been profound. With substantially-reduced numbers of human consumers, many native animal populations, especially those most highly preferred by humans, would have increased in number, altering the ecological balance in the environment and creating myriad new impacts on the land. It has been suggested that the often-astonishing abundance of game animals described by many early visitors to California is attributable to this proto-historic collapse of the human population.<sup>63</sup>

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<sup>58</sup> Early mariners often carried live animals to be butchered for fresh meat over the course of their journey.

<sup>59</sup> These species were sufficiently well-established on the landscape at the time the first missions were built to have been harvested with the mud used in construction of the adobe bricks. [George W. Hendry, "The Adobe Brick as a Historical Source" *Agricultural History* 5.3 (1931): p. 126.] Mensing and Byrne confirmed Hendry's thesis based on *E. cicutarium* pollen which they found in core samples taken from the Santa Barbara Channel. However, they proposed that this alien species migrated north from Baja California, where it had been introduced by Jesuit missionaries in the previous century. [Scott Mensing and Roger Byrne, "Pre-Mission Invasion of *Erodium cicutarium* in California," *Journal of Biogeography* 25 (1998): 757-762.]

<sup>60</sup> John Charles Frémont, *Report of the Exploring Expedition to the Rocky Mountains in the Year 1842, and to Oregon and North California in the Years 1843-44* (Washington, DC: Gales and Seaton, 1845).

<sup>61</sup> One possibility, discussed below, is that filaree contributed to the growth of rodent populations by providing an abundant new source of food. This, in turn, may have had an effect on native vegetation by increasing browsing pressure, especially on particularly vulnerable species like oak seedlings.

<sup>62</sup> Jones and Ferneau, "Deintensification" (2002); Broughton, "Pre-Columbian Human Impact" (2002); and William Preston, "Post-Columbian Wildlife Irruptions in California," in *ibid.* See also W. George Lovell, "'Heavy Shadows and Black Night': Disease and Depopulation in Colonial Spanish America," *Annals of the Association of American Geographers* 82.3 (1992): 426-443.

<sup>63</sup> E.g., Preston, "Post-Columbian Wildlife Irruptions" (2002), pp. 111-112. The most important of these observations are the earliest, since they are most likely to indicate the effect of epidemic disease rather than other causes of population decline (like the multiple effects of missionization following 1769). Sir Francis Drake, who visited California in 1579, was struck by the "infinite" numbers of "...very fat deer [probably elk], which there we saw by the thousands as we supposed in a herd." In 1602, Sebastian Vizcaino also observed great numbers of elk. Lt. Charles Wilkes wrote much later (in 1845) but was describing the Central Valley, still largely uninhabited by Europeans, when he wrote that "the variety of game in this country almost exceeds belief." [Quoted in Broughton, "Pre-Columbian Human Impact" (2002), p. 44.]

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Permanent European settlement of Alta California began in 1769 with the arrival of the first Spanish land expedition under the command of Captain Gaspar de Portolá and the Franciscan missionary Father Junípero Serra. The party established two permanent settlements—one at San Diego and the other at Monterey—by the close of that year. Over the next 50 years, this colony would expand to a total of 21 missions, four military garrisons (or *presidios*) and three civilian towns (or *pueblos*).<sup>64</sup> The purpose for establishing the colony was to protect the northern frontier and seaways of the Spanish colonial empire, but lacking sufficient colonists who were willing to settle in such a remote and seemingly hostile land, the Spanish authorities chose instead to Hispanicize the indigenous people, acculturating the Indians to Spanish ways of life and baptizing them in the Catholic Church. It was thought that the Indians would then become loyal citizens of the Spanish empire, and Alta California could become an integral part of New Spain rather than just a distant (and troublesome) frontier.<sup>65</sup> The missions were the most essential elements in this plan. They were to serve as cultural and spiritual training camps, where the Indians would all be gathered into one place and taught how to live like Christian Spaniards (albeit of the lowest class in Spanish society). The Franciscan missionaries would be both tutors and guardians of the Indians, legally charged with the responsibility of parents, since the Indians were perceived to be like children in their lack of any civilization recognizable to a European of that time.<sup>66</sup>

The first mission in Ohlone territory was San Carlos Borromeo, established among the Rumsen Ohlone at Carmel in 1770. The Chalon were not directly affected by the new system until 1791, when Mission Nuestra Señora de la Soledad was established just west of their territory within the Salinas Valley. Members of both Chalon and Esselen tribelets were brought here. (Some Chalon were also brought to Mission San Antonio de Padua, which had been established in 1771 in the coastal mountains southwest of the Salinas Valley.) In 1797, Mission San Juan Bautista was established on the east side of the Gabilans about 40 miles north of Pinnacles. It stood within the broad San Juan Valley, where the San Benito River joins the Pajaro before flowing into Monterey Bay. This mission was located among the Mutsun people—the Chalon's populous northern neighbors—and they became its principle occupants. Yokuts from the San Joaquin Valley and some Chalon tribelets were also brought here. Eventually, more than 500 Chalon were baptized within these three missions, becoming Christian *neophytes* and living according to Spanish law and custom, as dictated by the Franciscan *padres*. (The number of recorded Mutsun baptisms totaled close to a thousand.)<sup>67</sup> By about 1810, at the latest, all of the native Mutsun and Chalon villages had largely been abandoned, with their prior inhabitants now either living in the missions or dead. Though a small number may have avoided coming directly into the missions by dispersing to more remote country,

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<sup>64</sup> The twenty-first mission, *San Francisco Solano de Sonoma*, was actually established under the Mexican government in 1823.

<sup>65</sup> Herbert Eugene Bolton, "The Mission as a Frontier Institution in the Spanish American Colonies," *American Historical Review* 23 (1917): 42-61; Michael J. Gonzalez, "The Child of the Wilderness Weeps for the Father of Our Country: The Indian and the Politics of Church and State in Provincial California," *California History* 76.2-3 (1997): 147-72; Agustín Galán García, "Conflicto Entre la Autoridad Militar y los Religiosos de la Alta California, 1781-1792," *Hispania Sacra* 40 (1988): 807-823; and Francis F. Guest, OFM, "Principles for an Interpretation of the History of the California Missions (1769-1833)," *Hispania Sacra* 40 (1988): 791-805.

<sup>66</sup> James J. Rawls, *Indians of California: The Changing Image* (Norman: University of Oklahoma Press, 1984). But see also, Zephyrin Engelhardt, *The Missions and Missionaries of California*, 4 vols. (San Francisco, CA: James H. Barry, 1908-1913); and Edwin Edward Sylvest, Jr., *Motifs of Franciscan Mission Theory in New Spain* (Washington, DC: Academy of American Franciscan History, 1975).

<sup>67</sup> These affiliations and numbers are based on research done by Randall Milliken in the mission records. [Milliken, Ohlone/Costanoan (2009), pp. 63-66.] See also Zephyrin Engelhardt, *Mission Nuestra Señora De La Soledad* (Santa Barbara, CA: Mission Santa Barbara, 1929); Engelhardt, *Mission San Juan Bautista: A School of Music* (Santa Barbara, CA: Mission Santa Barbara, 1931); and Breschini, et al., *Cultural Resources Overview* (1983), pp. 148-150.

their lives were so profoundly affected by the Spanish influence in coastal California that they cannot be said to have truly escaped missionization.<sup>68</sup>

Spanish plans for creating an indigenous citizenry ultimately failed and proved to be a profound tragedy for the Indians. The native population of California declined by as much as a third during the 65 years of the missions' active existence, with most of this loss suffered by the Indians of the coastal regions who were directly affected by the mission system.<sup>69</sup> Exotic diseases introduced by the Spanish occasionally resulted in epidemics which not only devastated the mission communities but often spread throughout the surrounding country. The most notable of these outbreaks occurred in 1806, when measles reduced some mission populations by as much as a fourth; and in 1830, when an outbreak of what appears to have been malaria spread through the seasonal wetlands of the Central Valley, killing an estimated half of the indigenous population.<sup>70</sup> For most of the mission period, however, population decline was the result of a more gradual attrition resulting from factors which included high infant mortality, poor nutrition and hygiene, and psychological stress.<sup>71</sup> In many missions, the death rate exceeded births, and the neophyte population had to be maintained by constantly bringing more Indians in from the surrounding country.<sup>72</sup> Eventually, the Spanish resorted to using military raids to capture Indians from the interior valleys and foothills, but by that time all of the various Ohlone tribelets had been absorbed into the missions or were dead. With this widespread impact on the indigenous population and cultures, Spanish policy also had a profound though inadvertent effect on the land through suppression of traditional land management practices, above all, burning. However, as Governor Arrillaga's 1793 proclamation banning fires suggests, the Spanish policy did not immediately end all indigenous practices. In addition to the now-illegal burns, harvesting of traditional food resources continued well into the mission period, sometimes as a necessary supplement to a mission's failed agricultural harvest.<sup>73</sup> Where Indian populations persisted far from the missions themselves, traditional practices were also likely to have persisted. This situation might have continued even after mission records showed that the majority of Indians in an area had already been baptized, since it was not uncommon for the missionaries to allow baptized Indians to return to their native villages (or village sites) on a seasonal basis.

Bear Valley was always isolated from Spanish centers of influence—either by distance with respect to Mission San Juan Bautista, or inaccessible terrain with respect to Soledad—so any of the Chalon who remained in this area or returned to it with the missionaries' permission were effectively free to practice their traditional lifeways without hindrance from Spanish regulations or competing land use practices. This means that traditional activities like hunting, harvesting of native plants and seasonal burning could have continued sporadically within the study area even after most of the Chalon had been reduced to the mission system by 1805 or 1810. It is unlikely that any of these activities which may have

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<sup>68</sup> For a history of the mission system within the Ohlone culture area itself and its effects on native culture, see Randall Milliken, *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769-1810* (Menlo Park, CA: Ballena Press, 1995). During interviews with ethnographer John P. Harrington in 1929, Mutsun elder Ascencion Solórsano described how some of her people avoided the Spanish by escaping into the remote mountains. [C. Hart Merriam, "Ethnological Notes on Central California Indian Tribes," *Reports of the University of California Archaeological Survey* No. 68, Part III (1967): 371-403.] Breschini and Haversat cite evidence suggesting similar avoidance of the Spanish among the Esselen. [Gary S. Breschini and Trudy Haversat, "Post-Contact Esselen Occupation of the Santa Lucia Mountains," Paper presented at the Annual Meeting of the Society for California Archaeology, Riverside, CA, 21 April 2000.]

<sup>69</sup> Sherburne F. Cook, "The Indian Versus the Spanish Mission," and "Population Trends Among the California Mission Indians," in *The Conflict Between the California Indian and White Civilization* (Berkeley: University of California Press, 1976).

<sup>70</sup> Milliken, *Time of Little Choice* (1995), pp.193-95.

<sup>71</sup> Cook, "The Indian Versus the Spanish Mission" (1976). Non-lethal but debilitating diseases like syphilis, which was widespread, contributed to all of these factors by exacerbating them. [Cook, "The Indian Versus the Spanish Mission," pp. 22-30; and Milliken, *Time of Little Choice* (1995), p. 176.]

<sup>72</sup> Randall Milliken incitefully considers the complex motivations which compelled the Ohlone to accept baptism and join the missions. The choice was usually made willingly, but as Milliken points out, only after no other choices remained.

<sup>73</sup> Cook, "The Indian Versus the Spanish Mission" (1976), p. 46.



persisted were practiced with the same consistency and intensity as before, however, since by this time native social structures had been too-greatly disrupted by Spanish influence.<sup>74</sup> In the end, the most significant impact on the study area resulting from Spanish missionization was its relative abandonment. The landscape was reverting to wilderness for the first time in more than five centuries.

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California's missionary system became increasingly marginal in the years following 1821, when the liberal Mexican government replaced Spanish imperial rule. In 1833-34 the system was abolished through the Acts of Secularization and the missions themselves either abandoned or converted to diocesan churches. Most of their wealth was liquidated, and their once-extensive landholdings were broken up and distributed among private *rancheros* to become cattle ranches for a growing pastoral economy. Although Indian neophytes were legally entitled to mission property, including land, this obligation was rarely honored, and most of the surviving neophyte population soon dispersed. Some found work as *vaqueros* on the new ranches, while others settled in towns like San Juan Bautista which grew up around the sites of the old missions. By 1840, the Mexican *rancheros* had largely replaced the missionaries as the most important landholders in Alta California. More than 800 private grants were issued by the Mexican government during the brief fifteen years of its authority following the Secularization Acts.<sup>75</sup> Fewer than twenty had been granted during the previous period under Spanish rule. The transition from mission to *ranchero* regimes represented an intensification of pastoralism and probably a greater diffusion of its impact over a much broader extent of area, since many more practitioners were brought into the ranching economy, making it possible to penetrate into increasingly remote regions of Hispanic California. This included the upper San Benito River Valley and Chalone Creek Watershed for the first time since the arrival of Europeans. Grants were made on the San Benito River as far south as Tres Pinos, where in 1842 Angel Castro was awarded the Rancho Cienega de los Paicines. In 1846, the Rancho San Lorenzo was established within the traditional territory of the Chalon just south of the Pinnacles. (Chalone Creek forms part of its northern boundary.) It is unlikely that the grantee, Rafael Sanchez, actually developed or occupied the eastern portions of his extensive holdings, which also extended west into the more fertile and accessible Salinas Valley, but he undoubtedly pastured his livestock here. This is the earliest positive indication we have of European livestock in the proximity of the study area, though it is reasonable to assume that mission cattle, sheep and even horses wandered intermittently through this region as early as 1806.

Mexican land grants averaged many thousands of acres each.<sup>76</sup> The Rancho Cienega de los Paicines, for example, comprised almost 9,000 acres, while the San Lorenzo had more than 48,000 acres straddling both sides of the Gabilan Mountains. These figures represent the amount which was formally patented in U.S. land courts two decades later. The area actually used by the *rancheros* was probably much greater, since grant boundaries were only vaguely defined, and fences were never used on the Mexican range.<sup>77</sup> Even based on these conservative figures, however, the Mexican grants ultimately

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<sup>74</sup> It is also possible that the Chalone Creek watershed, being remote from the Spanish but at the same time connected by paths and trade routes to the Central Valley Yokuts, may have served as a hiding place for fugitives from the missions. This is an intriguing possibility, but there is no factual evidence to support it. From a land use perspective, it has little significance, since fugitives and hideaways would not have constituted a very substantial environmental impact.

<sup>75</sup> A total of 813 grants were issued. Some of these were fraudulent, however, made during the final moments of the Mexican regime in California just prior to the American conquest, so the lands may never have been occupied or developed. A U.S. land court was established in 1851 to distinguish between legitimate and fraudulent grants and ultimately patented 553. [Minnich, *Fading Wildflowers* (2008), p. 96.] This lower figure is probably a closer approximation of the number of grants which were actually ranches during the Mexican period.

<sup>76</sup> Steven W. Hackel, "Land, Labor, and Production: The Colonial Economy of Spanish and Mexican California," *California History* 76.2-3 (1997): 132.

<sup>77</sup> Robert Glass Cleland, *The Cattle on a Thousand Hills* (San Marino, CA: Huntington Library, 1951), pp. 24-25.

accounted for as much as ten million acres of land in Alta California. This represents a tenth of the area of the present state and a little under one-fifth of its total grazeable lands.<sup>78</sup> The number of stock raised by the Mexican rancheros on these extensive holdings is similarly impressive, totaling at least one million head by the time of the American conquest in 1848.<sup>79</sup> This number would increase to more than three million over the next fifteen years, stimulated by a growing demand for beef among the new immigrants who arrived following California's incorporation into the United States.

Mexican political authority in California came to an end with the conclusion of the Mexican-American War in 1848, followed two years later by California statehood. But even more consequential was the discovery of gold during the summer of that year, only nine days before the ratification of the Treaty of Guadalupe-Hidalgo which ended the war. Within a year, the news had precipitated one of the largest mass migrations in American history. Between 1848 and 1852, the peak of the gold rush, California's non-Hispanic population increased from about 6,000 to more than a quarter million. Most of these immigrants either settled in San Francisco, the principal point of disembarkation, or scattered throughout the goldfields in the western foothills of the Sierra Nevada Mountains. The migration had little direct effect on the central coastal range and the area around Bear Valley, but it soon had a very important indirect effect. The vast numbers of miners, flush with gold but lacking most other essentials (like food), soon created a lucrative market for beef. Prices rose from a few dollars a head to as much as \$75 nearly overnight, and the cattle industry boomed as a result. Despite the change in government, Hispanic rancheros benefitted under these favorable economic conditions, especially in the southern parts of the state which remained relatively unaffected by the influx of new immigrants.

The Hispanic rancheros were not the only beneficiaries of this cattle boom. Patrick Breen, an Irish-American immigrant who had arrived by overland route to California in 1846, on the eve of the Mexican-American War, was one of the few non-Hispanic settlers to ignore the temptation of gold and undertake ranching instead. He began purchasing land around San Juan Bautista shortly after his arrival and stocked it with cattle and sheep. According to Patrick's oldest son, John, the family was inspired to move its operation south, up the San Benito River valley and as far from town as practicable.<sup>80</sup> This was because of the lawless behavior of American immigrants who were squatting around San Juan Bautista at that time, many of whom seemed indifferent to the property rights of existing land owners. Their indifference extended to hoofed property, and the Breens were losing stock to cattle thieves.<sup>81</sup> Their first expansion south took in the Pacheco Ranch, which lay about 40 miles southeast of San Juan.<sup>82</sup> This was purchased in the fall of 1853. Later in the 1850s, Patrick Breen also acquired land along the San Benito River as far south as Bitterwater, and in the early 1860s, Patrick Breen's second son Edward purchased the Rancho San Lorenzo from Rafael Sanchez. With these holdings, the Breen family all but surrounded Bear

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<sup>78</sup> Geographer Lee Burcham estimated California's total grazeable area at that time to comprise about 52.7 million acres, excluding marginally-productive desert lands. [L.T. Burcham, "Cattle and Range Forage in California: 1770-1880," *Agricultural History* 35.3 (1961): 143.]

<sup>79</sup> This is a conservative estimate based on observations of annual hide production made by American naval officer Lt. Charles Wilkes in 1841 and French navigator Duflot de Mofras in 1844. Wilkes estimated 150,000 hides per year, while Mofras estimated 200,000. This harvest would have required at least one million animals in order to remain sustainable. [Charles Wilkes, *Narrative of the United States Exploring Expedition...* (Philadelphia, PA: Lee & Blanchard, 1845; and Eugene Duflot de Mofras, *Duflot de Mofras' Travels on the Pacific Coast*, trans. by M.E. Wilber (Santa Ana, CA: Fine Arts Press, 1937.)

<sup>80</sup> John Breen, "Diary, 1853-1855," California Historical Society, North Baker Research Library, San Francisco, CA.

<sup>81</sup> John Breen wrote, "Edward and Patrick [his two younger brothers] are going to commence gathering the cattle tomorrow for to take them to the ranch, as it is impossible to keep our kind neighbors from stealing them. They must live and they are too lazy to work for a living, so the only alternative is to steal from those who do work." [Entry for May 7, 1854.]

<sup>82</sup> Pacheco was probably a reference to Don Francisco Pacheco, who acquired most of the former San Juan Bautista Mission lands after secularization, but which part of Pacheco's vast territory is not clear. He owned, at one time or another, the Rancho Ausaymas y San Felipe, the Bolsa de San Felipe, the vast Rancho San Justo, and the Rancho San Luis Gonzaga in Santa Clara County.

Valley, where their cattle would occasionally wander, as noted by some of the immigrants who later settled here.<sup>83</sup>

For the duration of the 1850s, livestockmen like the Breens were the most noteworthy presence in the upper San Benito Valley, though the Breens employed Indians as vaqueros on their ranch holdings. Some of these Indians may have been living in the area already.<sup>84</sup> The Schmidts, a ranching family who settled just south of Bear Valley in the 1870s, believed that some of the earliest homesteaders in this vicinity were Indians, as attested by one family member who recalled that,

Some of the early Indian family names were Coto, Rosas, and Domingo Villa. Eventually their claims were purchased by neighboring farmers, the Schmidt family acquiring some. There is no evidence of any settlements now, except for a few mortars and pestles and other Indian relics. On a promontory on the Rosas property a number of mortars and pestles have been found, evidence showing that the Indian families gathered there to grind their acorns.<sup>85</sup>

Rosas Canyon lies just south of Horse Valley where the Schmidt home ranch was established and drains into Chalone Creek about a mile below Bear Valley, not far from the study area. The names which these families bore indicate their Hispanic acculturation—at least nominally—but say little about their place of origin. They could be indigenous Mexicans who migrated north to California, or they could be ex-mission neophytes. It is intriguing, however, that these families chose to settle on a site occupied by Indians prior to European contact, as Edith Schmidt's description of the bedrock milling station indicates. One can only wonder if they were Chalon or Mutsun survivors of the mission period returning to lands which they associated with their ancestors. Genealogical research on these families, and on other settlers in this region with Hispanic names, may reveal more information about the fate of post-mission Indians during the early years of the American period when the histories of many California Indian peoples were submerged in obscurity.

Another occasional presence in the upper San Benito Valley during the 1850s were miners carrying quicksilver (processed mercury) from the Panoche Hills to San Juan Bautista. One of several routes followed by the miners lay along the San Benito River, after descending from the mountains above Hernandez Valley to Dry Lake. This later became the route followed by the modern highway (until it was redirected through Bear Valley in the 1930s). In 1857, William Harrison Stone established a sheep ranch at Mulberry along the miners' road several miles north of Bear Valley. He is believed to be the first English-speaking resident to settle on the upper San Benito River.<sup>86</sup> As yet, however, no Americans had settled in Bear Valley itself, and the chief activity affecting the study area during the first two decades of the American era remained intermittent livestock grazing, primarily cattle, which in those years were still allowed to range freely from the Breen ranch south of the Pinnacles and the Rancho Cienega de los Paicines in the north.

Patrick Breen's son, John Breen, kept a diary in which he recorded some intriguing observations about fires, which occurred with surprising frequency during these years. Beginning in late spring or early summer, once the rains had ceased and the vegetation began to dry, Breen described at least one major fire every few weeks until the rains returned in late October or early November. In 1854 alone, between May and the end of September, Breen observed no less than thirteen wild fires visible from his home in the San Juan Valley. Some of these were accidental in origin, ignited by negligent farmers in the nearby valley bottoms.<sup>87</sup> But most of the fires described by Breen were located in the chaparral on the

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<sup>83</sup> Joseph Warren Matthews, "Diary, 1869-1900," Bancroft Library, Berkeley, CA.

<sup>84</sup> Matthews, "Diary," Bancroft Library.

<sup>85</sup> Edith Bacon Schmidt, "Jef Nessen Schmidt Family and the Horse Valley Ranch," typescript, 1967. [Courtesy of Deborah Melendy Norman.]

<sup>86</sup> Henry D. Barrows and Luther A. Ingersoll, *A Memorial and Biographical History of the Coast Counties of Central California* (San Francisco, CA: The Lewis Publishing Co., 1893), pp. 419-420; and Peter Frusetta, *Beyond the Pinnacles: The History and Folklore of Southern San Benito County* (Tres Pinos, CA: Peter Frusetta, 1990), pp. 27-28.

<sup>87</sup> Breen mentions one such fire which burned part of the valley, including a few buildings, in September of 1854: "There was a great fire in the valley today ... It originated in the field of old Dotson [a Dutch settler] on

surrounding mountains, and probably originated within it.<sup>88</sup> Few of these could have been started by farmers, though Breen believed they had been set by humans, as he implies in the following observation:

There is heavy fire on the mountains south of this place today, commence about 2 o'clock. The [illegible] who sets fire to the grass to starve the stock ought to be hung and left to dry as an example to posterity.<sup>89</sup>

Breen does not explain why he believes the fires were intentional, though they might have been set by sheepherders to clear brush and improve pasturage. That sheepherders customarily burned both forest and brush for this purpose throughout early California is well-documented, and sheepherders frequently passed through the upper San Benito watershed during these years.<sup>90</sup> If, on the other hand, some Indians had returned to the region after the collapse of the mission system, as Edith Schmidt's recollections suggest, it is possible that at least some of these fires may have represented a brief revival of traditional land management practices. This interpretation is more consistent with Breen's assertion that the incendiaries were burning grass rather than brush, as this had once been a common Indian practice, though not a European one.

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By the end of the 1850s, cattle prices were starting to drop as the market became overglutted with beef. The California rancheros, who had been celebrating a decade of good fortune, now began to see their profits dwindle. Exacerbating this economic crisis, many of the rancheros needed additional cash to defend their Mexican-era grants in the U.S. land courts, as they were required by the Land Grant Act of 1851. While the majority of grantees were able to prove their titles under U.S. law, they did so at great personal expense in lawyer and surveyor fees, paid with money borrowed against their vast land holdings. Many soon accumulated enormous debt, more than they could have paid off even if the cattle industry had remained healthy, but it did not. The final blow to the ranchero economy came from the weather.<sup>91</sup>

In the winter of 1861-62, torrential rains fell, flooding much of the country. Many livestock drowned that year, but the greater devastation was caused by the subsequent drought, during which only a fraction of normal precipitation fell over the next two years. By the spring of 1864, with little new grass appearing on the already closely-cropped ground, cattle began to starve and die. Just how many were lost that year remains unknown but might have been as much as a third of the total population, or about one million head statewide. In local instances, especially in southern and central coastal California where the Hispanic ranching industry was concentrated, the figures were even more dramatic. John Hittell, for instance, observed that "Santa Barbara County had 97,000 head in the spring of 1863, and only 12,090 in the spring of 1865, indicating a decrease of 85,000."<sup>92</sup> Although the cattle industry would survive, the period of its dominance in California's rural economy was over, and certainly over was the dominance of the Hispanic rancheros, who soon lost most of their land through the combined burdens of debt, depressed cattle prices, and now the loss of much of their stock.

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the San Benito River where he was burning the grass off a threshing floor." [Breen, "Diary," California Historical Society.]

<sup>88</sup> For example, on February 2, 1854, Breen writes, "Fire in the mountains south of this place all day, burning off the old grass." [Breen, "Diary," California Historical Society.]

<sup>89</sup> Entry for June 10, 1854 [Breen, "Diary," California Historical Society.]

<sup>90</sup> William S. Brown and Stuart B. Show, *California Rural Land Use and Management: A History of the Use and Occupancy of Rural Lands in California* (Washington, DC: U.S. Forest Service, California Region, 1944).

<sup>91</sup> Cleland, *Thousand Hills* (1951); and Leonard Pitt, *The Decline of the Californios: A Social History of the Spanish-Speaking Californians, 1846-1890* (Berkeley: University of California Press, 1970). On the 1851 Land Grant Act, see also Paul Wallace Gates, ed., *California Ranchos and Farms, 1842-1862* (Madison: The State Historical Society of Wisconsin, 1967).

<sup>92</sup> John S. Hittell, *The Resources of California*, 6<sup>th</sup> ed. (San Francisco: A. Roman & Co., 1874), quoted in L.T. Burcham, *California Range Land: An Historico-Ecological Study of the Range Resources of California* (Sacramento, CA: Department of Natural Resources, Division of Forestry, 1957), p. 140.

One result of this tragedy was a growing interest in sheep among those California pastoralists who survived. Sheep had always been present in California's pastoral economy. Small flocks of Spanish sheep had accompanied both the initial Portolá expedition in 1769 and the much larger de Anza party in 1776. These were raised by the missionaries for their wool, which was woven by Indian neophytes into coarse, unfulled garments and rugs. By 1797, when the first great expansion of the mission system occurred (and Mission San Juan Bautista was established), there were approximately 6,000 head of sheep in Alta California, a figure which increased to about 300,000 by the time the missions were secularized.<sup>93</sup> With the growth of the cattle industry under the Mexican rancheros, sheep raising was largely neglected, and the total population had fallen to about 18,000 statewide by the time of the first U.S. census in 1850. It rapidly increased, however, during the ensuing decade with introductions by American immigrants. Sheep raising benefited as much as the cattle industry from the high demand for meat in the goldfields during the first half of the 1850s, even though the only breed then available in California—the *churro*—produced notoriously low-quality mutton.

The quality of the California sheep, and prospects for the industry, were dramatically improved in 1853 when the Flint brothers, Benjamin and Thomas, with their cousin Llewelyn Bixby brought a herd of approximately 2,400 Spanish Merino sheep to California from Vermont and proceeded to raise them on the Rancho San Justo, a portion of the original San Juan Bautista Mission lands which they had purchased from Francisco Pacheco.<sup>94</sup> The Merino produced a much higher quality wool than the half-wild *churro*, short in fiber but soft and well-crimped, and it commanded a premium price on the international market. By 1860, when California's cattle herd numbered at least three million, there were approximately one million sheep in the state. With the collapse of the cattle industry following the drought of 1864, this number quickly increased to four million in 1870. Sheep were preferred by pastoralists who were concerned about drought, because they had a much more eclectic palette than cattle and required less water to survive. They were also easier to drive long distances and thus lent themselves more readily to a transhumance form of pastoralism. With this discovery, a new pattern was established in the ranching industry, with sheep pastured at lower elevations in the San Joaquin Valley and inland coastal valleys like the San Juan and San Benito during the wet winter months. They were then moved in massive overland drives to high meadow pastures in the Sierra Nevada Mountains in the spring, where they could find green forage for the duration of the summer months. The California sheep industry continued to grow until the mid-1870s, when it suffered a similar fate as its bovine cousin a decade earlier. In 1876, when the sheep population stood at an all-time high of 6.7 million head, drought once more desiccated the California range, and the vastly-overstocked sheep herds began dying off for lack of adequate forage. At best, sheep represented only a temporary extension of the dominance of pastoralism in California's rural economy, and the industry never fully recovered after the 1876 drought. By 1890 most of the sheep industry had migrated to the intermountain states, and what remained in California continued only as a marginal supplement to other, more significant, economic activities.<sup>95</sup>

Another important consequence of the 1864 drought was the diversification of California's rural economy with greater emphasis placed on agriculture, especially dry-farmed cereals. Even where pastoralism remained a dominant industry in California, ranchers ceased to rely exclusively on natural forage and began growing supplemental feed. On the upper San Benito River and in Bear Valley, this transition of the pastoral-dominated economy to a more diverse agricultural basis was signaled by the arrival of the first agrarian homesteaders. These were mostly American immigrants from the Middle West and New England. The earliest settled around Dry Lake and on the San Benito River a little southeast of Bear Valley, eventually forming the community of San Benito. This small town later prospered from its location at the juncture of the principal stage route and the road to the mercury mines of the Panoche Hills. In 1865, some of these immigrants finally came to Bear Valley itself and established the first

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<sup>93</sup> This was the figure estimated by Duflot de Mofras in 1842.

<sup>94</sup> This and the following are from George H. Tinkham, "The Story of San Benito County," in J.M. Guinn, ed., *History of the State of California and Biographical Record of Santa Cruz, San Benito, Monterey and San Luis Obispo Counties...* (Chicago: The Chapman Publishing Co., 1903); and Marjorie Pierce, *East of the Gabilans* (Santa Cruz, CA: Western Tanager Press, 1976), pp. 49-51.

<sup>95</sup> Edward J. Wickson, *Rural California* (New York: Macmillan, 1923), p. 257.

permanent homesteads here. They remembered seeing the dried carcasses of dead cattle as they made their way south to their new home—one can hardly imagine a more fitting scene to evoke the passing of one era and the coming of another.

### III. Settlement during the American Period

#### The Homesteading Generation (1864 to 1880).

Although American settlers first began moving up the San Benito River and into the Dry Lake area as early as 1857, Bear Valley was not settled until 1865. This was possibly due to its isolation from the principal road (or track) through the region, which lay further east along the river.<sup>96</sup> Nonetheless, Bear Valley had many qualities to recommend it to the homesteader of that day, not least of which was an abundance of artesian springs in the vicinity of the Pinnacles, and the relatively high water table on the floor of the valley itself. The first to settle here was a doctor named Americus Powers. Originally from Vermont, Powers had emigrated to California in response to the gold rush, hoping to find business for his medical practice among the quickly swelling population. He settled first in San Leandro, a small farming community just south of San Francisco, but after failing to gain title to his property after fifteen years, Powers was forced to move once more and relocated to Bear Valley in 1865. Doctor Powers established his new homestead in the very center of the valley, where he claimed 160 acres and within ten days had erected a small house, a barn and stables.<sup>97</sup> Doctor Powers was soon joined by several relatives and old acquaintances, who quickly established a small community of homesteaders here. His brother-in-law, Aaron Rockwood, was the first to follow later that same year, settling on 160 acres with his own family next to Powers. (Doctor Power's wife, Mary Rockwood, had died of pneumonia seven years earlier.) Rockwood's young nephew, Henry Melendy, came at the same time and established a homestead at the far north end of Bear Valley near the mouth of Bickmore Canyon.

The first homesteaders to settle at the south end of Bear Valley (near the Pinnacles) were Elizabeth and Myron Bacon with their six—soon to be seven—children. The Bacons were acquainted with Doctor Powers from San Leandro, where he had been the family physician. They learned about Bear Valley from their oldest son, John Shell, who had accompanied Henry Melendy on his journey south in 1865 with the Rockwoods.<sup>98</sup> When John returned, he spoke so highly of the place that eventually Elizabeth and Myron decided to move south as well. In November 1866, the entire family came to Bear Valley to settle on land John Shell had already chosen for them in the Pinnacles bottomlands not far from the confluence of Sandy and Chalone Creeks. He had built a small cabin on the site the previous year to claim the property for his family. (This was only an informal claim, since Bear Valley would not be

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<sup>96</sup> Deborah Melendy Norman, "The Shells, Quigleys, and Bacons: From Calhoun County, Illinois, to California," in Deborah Melendy Norman, ed., *South County Pioneers: Version 2.0*, unpublished ms. (compact disc), December, 2005, p. 23.

<sup>97</sup> From Americus Power's land claim affidavit. His claim was for 160 acres in Sections 18 and 19, Township 16 South, Range 8 East. His claim was patented in 1882, patent file #6073. [Norman, "Shells, Quigleys, and Bacons" (2005), p. 22.] This was corroborated by the Agricultural Census of 1869, which indicated that Doctor Powers was cultivating 40 acres of land and raising 350 sheep. The census schedule listed no other animals, but it is unlikely that Doctor Powers did not have at least one horse for getting around.

<sup>98</sup> John Shell was one of three children by Elizabeth's first husband, Philip Shell, who had died of an accident in 1854 while the couple was living in Oregon Territory. After marrying Myron Bacon soon afterwards, the couple moved to San Leandro in 1858 to be close to members of Myron's family. Myron's mother was living there at the time, caring for two of his children by an earlier wife. Myron's brother and sister, along with their respective spouses and children, lived in nearby Oakland on the east side of the San Francisco Bay. During the eight years that Myron and Elizabeth lived in San Leandro, they became acquainted with Doctor Powers, who acted as their family physician, probably assisting Elizabeth in child birth, for she had two more children at that time—Mary Ann Bacon, who was born in 1858, and Horace Greeley Bacon, born in 1864. (Myron and Elizabeth's first child, Oliver Frémont Bacon, had been born in 1856 prior to their coming to San Leandro). [Norman, "Shells, Quigleys, and Bacons," (2005).]

surveyed for another decade.)<sup>99</sup> Shortly after arriving, Elizabeth gave birth to her seventh and last child, Benjamin Franklin Bacon, who was born that December during a winter storm as the swollen waters of Sandy Creek flooded across the floor of their primitive cabin. Ben was the first American child to be born in Bear Valley.

The Bacons brought several dairy cattle with them when they came south. These were descended from Durham stock which they had originally brought over the Oregon Trail from Illinois. At this time, eastern-bred American cattle were still uncommon in California and highly valued, especially after the demise of the Mexican herds in the drought of the previous year. (Family members recalled seeing the bones of these *ganás prietas* still littering the fields on their journey from San Leandro to Bear Valley.) The Bacons also brought horses and pigs with them.<sup>100</sup>

The 1869 agricultural census noted that the Bacons were still living on their original 160 acres three years later.<sup>101</sup> Their operation remained small, with the entire ranch valued at \$500. Their only agricultural product at that time was hay, and the census enumerator noted that they had harvested 37 tons that year. Since one ton an acre was a typical yield for non-irrigated land, this suggests that the family was cultivating about 40 acres. This, too, was not unusual, since mechanization had not yet been introduced to the South County, and the hay would have been mowed by hand scythe, limiting the amount of area which could practically be harvested by one family. The Bacons' remaining acreage was probably used as unimproved pasturage for their animals. The census also indicated that the family had eight horses, five sheep and 15 swine but does not list any cattle, dairy or otherwise.

With nine members in the Bacon household, the small cabin which young John Shell had originally constructed soon proved inadequate. Sometime between 1867 and 1870, a second house was built, and the family divided itself between these two residences. The 1870 population census indicated that Elizabeth and Myron Bacon were living with the four Bacon children (Oliver, Mary Ann, Horace and three-year-old Ben) in one house. This was probably the newer—and presumably larger—of the two. John Shell was living with his sister Susan in the other house next door, which may have been the cabin from 1865, or a modification of it. (John's other sister, Deborah, had left the household in 1868 when she married Henry Melendy and was living at the north end of Bear Valley.) According to family tradition, Elizabeth Bacon

... originally had a home farther south toward the Pinnacles. She had homesteaded the area. Later she moved the house to where it is now and lived there. Eventually Uncle Ben [Elizabeth and Myron's youngest son] and Aunt Ora Bacon lived there. It was Greatgrandmother Shell Bacon's home until her passing in 1901.<sup>102</sup>

The home farther south mentioned in this account must be the original cabin built by John Shell in 1865. The flooding which occurred as Ben Bacon was being born that winter may explain why the cabin was moved and suggests that it originally stood in the flood plain, probably closer to Sandy Creek, but exactly where is not known since no physical evidence remains.

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<sup>99</sup> The family did eventually file on a quarter section of land which was patented under Elizabeth Bacon's name in 1881. It lay in the northeast quarter of Section 31, Township 16 South, Range 8 East, not far from the Chalone Bench. This may not correspond precisely with the land that John Shell settled on in 1865 but was probably very close [*Abstracts*, Fidelity Title and Insurance Company (FTIC), Hollister, CA.]

<sup>100</sup> Norman, "Shells, Quigleys, and Bacons" (2005), p. 24; Cleland, *Thousand Hills* (1951).

<sup>101</sup> U.S. Bureau of the Census, *Nonpopulation Census Schedules for California, Agriculture*, 1870, Bancroft Library.

<sup>102</sup> Juanita Burton Hinman, "The Trail Back," unpublished ms., September, 1979, p. 25. [Scanned copy courtesy of Deborah Melendy Norman.] Juanita uses the term "Greatgrandmother" in this manuscript, because she is addressing her children. Elizabeth Bacon was Juanita's grandmother. Juanita was the daughter of Susan Shell and Ebenezer Burton (Ebenezer's brother, Joseph Burton, married Emma Beatrice Witherspoon Davison; his sister, Elizabeth Burton, married Leander Davison, who owned a hotel in Tres Pinos where he was shot and killed by Tiburcio Vasquez in 1873).

By 1879, the Bacon Ranch had improved substantially from the condition which the census enumerator described only a decade earlier. The agricultural census taken this year indicated that the ranch being operated by "Elizabeth and son" was valued at \$1,200, an increase of nearly 150 percent from ten years earlier.<sup>103</sup> (The son was probably Oliver, who was 24 at the time and still living with his mother). Seventy acres of land were being cultivated—probably for wheat and barley—and seven tons of hay had been mown on 10 acres. One hundred and sixty additional acres were being used for pasture. Approximately one acre of apples and peaches had also been planted, though no fruit had yet been harvested (the trees were probably still too young). Elizabeth owned eight horses, five milk cows, six beef cattle, 17 swine and 50 poultry. In the past year, 600 pounds of butter had been manufactured and 170 dozen eggs collected. One hundred pounds of honey and ten pounds of wax had also been gathered from wild bees. By this time, Myron's brother, William, had moved down from Oakland with his family and was living on Sandy Creek as well. They probably occupied the house which John and Susan Shell had recently vacated, since the population census indicates that they were living next door to Myron and Elizabeth. William had cultivated 40 acres that year and produced 15 tons of hay on ten acres of land. He owned four horses, six dairy cows, 12 beef cattle, 15 swine and 40 poultry. In the past year, he had produced 400 pounds of butter and collected 200 dozen eggs. William Bacon did not stay very long, since he leased a house in Bear Valley above Doc Powers later that year and was living in nearby Hernandez by 1881.<sup>104</sup>

Myron and Elizabeth Bacon were divorced in 1879. (According to Elizabeth's testimony, Myron had neglected their children). As a result, Myron moved off the original Bacon Homestead and established his own ranch a little further south on Chalone Creek. The agricultural census included him that year as a separate entry, living on his own quarter section of land where he claimed to have cultivated 47 acres with 113 acres devoted to pasture. He owned two milk cows, one swine and ten poultry and had collected 30 dozen eggs over the past year. He had not manufactured any other products, not even dairy. In 1887, Myron officially filed a homestead claim for 120 acres on the Chalone Creek property.<sup>105</sup> According to his patent affidavit, which was granted in 1890, Myron had been living permanently on the land since 1883 (suggesting that he had remained with Elizabeth for a few years after their divorce). He built a simple cabin, which measured only 8 by 10 feet with a shake roof, a floor, one door and one window. He had enclosed ten acres of land with a half mile of wire fence and planted five acres of fruit trees and vines. By 1890, Myron claimed there were 500 three-year-old grape vines and between 400 and 500 four-year-old fruit trees, all bearing fruit. The rest of the land was suited only for low intensity grazing, as it lay on steep, brushy hills.<sup>106</sup> Stan Schmidt, who is Myron's great grandson, recalls hearing that Myron was "something of an orchardist." According to Stan, Myron planted orchards in a number of places around Bear Valley, and Stan still remembers seeing some of these trees when he was a young boy.<sup>107</sup> No evidence of Myron's improvements can be found on Chalone Creek today, though this is not surprising, since his homestead would have been located within the flood plain, and Chalone Creek has flooded several times since the 1890s. At least two large fires have also burned through the area, one in 1931 and the other in 1998. A fire scar study done in the late 1970s found evidence of a large conflagration also occurring here in 1900.<sup>108</sup> Any one of these events could have obliterated Myron's simple improvements.

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<sup>103</sup> U.S. Bureau of the Census, *Nonpopulation Census Schedules for California, Agriculture*, 1880, Bancroft Library.

<sup>104</sup> The house he leased from Doc Powers was the same one that Ebenezer Burton and Susan Shell Burton had lived in before moving to the San Joaquin Valley in 1886.

<sup>105</sup> This comprised 120 acres along the eastern quarter of Section 12, 16\_7. [Abstracts, FTIC.]

<sup>106</sup> U.S. Bureau of the Census, *Nonpopulation Census Schedules for California, Agriculture*, 1880, Bancroft Library.

<sup>107</sup> Stanley Schmidt, "The Horace G. Bacon Family," in Deborah Melendy Norman, ed., *South County Pioneers: Version 2.0*, unpublished ms. (compact disc), December, 2005, p. 3.

<sup>108</sup> United States Department of Interior, *Fire Management Plan: Pinnacles National Monument* (Paicines, CA: National Park Service, Pinnacles National Monument, 2007); Jason Greenlee and Andrew Moldenke, *The History of Wildfires in the Region of the Gabilan Mountains of Central Coastal California* (Paicines, CA: National Park Service, Pinnacles National Monument, 1981).



The total amount of land associated with the Bacon family that was being actively utilized in southern Bear Valley at this time—including Myron's small homestead on Chalone Creek—was 880 acres. This contrasted with only 160 acres that were being used in 1869. The 880 acres recorded, however, represented only the land being actively cultivated or grazed by the family's animals. The total area of land actually claimed by the Bacons was much larger and included non-usable brushland on the hillsides bordering the valley as well as the cultivable land on the valley floor. This dramatic increase in the extent of the family's property over the course of barely ten years was legally possible because the Homestead Act allowed individual family members to file additional land claims regardless of their relationship to the original claimant. Many homesteading families used this strategy to increase the size of their home ranch by having spouses and children claim adjacent parcels of land. By the end of the century, the Bacon Ranch comprised several distinct homesteads filed under the names of four separate family members. Over time, the ranch would grow even larger as the family purchased neighboring ranches as well.

In 1880, Elizabeth Bacon homesteaded her second quarter section parcel adjacent to the original home ranch, bringing the total property on Sandy Creek listed in her name to 320 acres. According to her final affidavit, which was filed in 1891, a small house already existed on this land, which she fixed up in order to reside there herself. She claims that she moved in in 1890. Elizabeth thought the house had been built in 1879, but she does not say who built it. The structure measured 12 by 14 feet and was constructed of "studding and weatherboard lined and papers." In other words, it was a woodframe structure with plank cladding—possibly lapped or battened but more likely just flush—with wallpaper on the interior. Wallpaper was sometimes used in lieu of chinking to keep out the wind. According to Elizabeth's testimony, the structure had a good roof and floor, doors and windows. This was an indication of the structure's quality, since many homestead cabins had no floors and only shutters to close the windows. The cabin built by John Shell and Henry Melendy in 1866, for example, had none of these amenities. Elizabeth's new homestead also included three-quarters of a mile of fencing. Only a small proportion of the land—15 acres—was cultivable. The rest was suited only for low intensity grazing.<sup>109</sup> A glance at the map confirms this testimony. Most of the land Elizabeth claimed occupies the steep, brushy hills on the west side of the valley. Only a small proportion of the property included level bottomland. This lay in a small, unnamed canyon just north of the present Regan property.<sup>110</sup> Elizabeth's house probably stood a short distance up this canyon, close to where it begins to narrow, rather than in its mouth, since the water table is very close to the surface here and the land floods during the winter. This presumed location is corroborated by a sketch map made in the early 1940s by Park Service staff, which shows a house marked here. The map does not indicate who owned the house, as it did other homesteads in the area, which suggests that it had been abandoned by this date.<sup>111</sup> Elizabeth testified that she lived here with her grandson John William Shell and left the property only during harvest time when she cooked for her sons' header crew. A letter dated 1896 mentioned that Elizabeth Bacon milked seven cows and made butter, which she sold for cash. She was also raising 100 turkeys.<sup>112</sup> A local newspaper reported that "On Mrs. Bacon's place vegetables of all kinds are grown in abundance."<sup>113</sup>

Oliver Bacon, Elizabeth's oldest child by Myron, never married. He claimed 320 acres adjacent to his mother's homestead. This property included the lower half of McCabe Canyon and the land directly opposite it on the southeast side of Highway 146. (At that time, McCabe Canyon was called Ollie's Canyon. Nobody seems to know when or why the name changed.) Oliver received patent on this land in 1891 and built a small house on the east side of the road just south of his parents' place.<sup>114</sup> Oliver never lived in McCabe Canyon or made any substantial developments there. Although McCabe Canyon offered

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<sup>109</sup> From Elizabeth Bacon's land file affidavit in Norman, "Shells, Quigleys, and Bacons" (2005).

<sup>110</sup> The place is colloquially called Rose Canyon on account of the many rose bushes (*Rosa californica*) which grow at its mouth.

<sup>111</sup> Park base map with hand-drawn annotations, dated 1942. [National Park Service, *Administrative History Records Collection, 1903-1999*, PINN 3658, Box 42, f. 22, Pinnacles National Park, Paicines, CA.]

<sup>112</sup> Roy Burton, letter to his mother Susan Shell Burton, May 11, 1896. [Quoted in Norman, "Shells, Quigleys, and Bacons" (2005).]

<sup>113</sup> *Hollister Free Lance*, February 26, 1889.

<sup>114</sup> *Abstracts*, FTIC.

many ideal sites for a homestead, Oliver may have preferred to leave it in a natural condition in order to encourage wildlife, since he was a prolific hunter and McCabe Canyon was known throughout Bear Valley as one of the finest spots for hunting. This was owing to the springs which rise along the foot of the hills on the east side of the canyon.

In several places, these springs remain bubbling artesian for much of the year, but even when the flow diminishes late in the summer, it never completely stops, and the lower half of McCabe Canyon remains well-watered in the driest years. This perennial supply of water supports a verdancy which is unusual for the area, found only in a few other places on the east side of the Pinnacles (most notably at Willow Spring). Large valley oaks grow here, supplying abundant mast for many different animals and shade during the hot months of the summer. The grasses and sedges which grow beneath this dense overstory provide a reliable browse for deer all year long, and these animals could almost always be found here, often in large numbers. Oliver took advantage of these springs for his domestic water supply. In 1900, he dug out a spring box on the east slope of the canyon a few hundred meters above the canyon mouth. This structure consisted of a small cavity excavated into the side of the hill over one of the artesian sources. Oliver lined the cavity with redwood boards and collected the water in a one-inch steel pipe which he extended underground all the way to the mouth of the canyon just opposite his house. Here, he built a concrete watering trough next to the road for livestock. Closer to his house, on the south side of the road, he installed a spigot for domestic use. Most of this system is still present, though it is no longer functional.

#### *The Butterfield Ranch*

Despite the advantage of being first at the southern end of Bear Valley, the Bacons were not the most prosperous homesteaders here (at least not until much later). This distinction went to the Butterfield family, especially George M. Butterfield, who settled nearly a decade after the Bacons on land just north of the Bacon homestead.<sup>115</sup> George was the middle of five children born to Thomas and Hope Butterfield,<sup>116</sup> a family of New England farmers, originally from Maine, who had gradually made its way west during the last few decades before the American Civil War. Thomas Butterfield had engaged in a variety of business ventures during the course of this extended migration and was wealthy enough when he reached California in 1859 to purchase a large ranch on the Yuba River (in northern California) for \$20,000. He remained there for ten years before moving to Santa Cruz on the California coast, and shortly thereafter to the upper San Benito River valley in the fall of 1869, where he established a business raising Angora goats and pure-bred sheep with his third son James. This ranch was located several miles north of Bear Valley not far from the present town of Paicines.<sup>117</sup> Shortly afterwards, George Butterfield settled in Bear Valley, establishing a homestead on the Pinnacles bottomlands between the present Highway 25 and the Regan property. (Thomas Butterfield's other two sons, William and Charles, had both gone to San Francisco instead, where in 1865 they founded the auction house of Butterfield and Butterfield.)<sup>118</sup>

George Butterfield's land in Bear Valley was not as well-watered as the Bacon Ranch, but George compensated for what he lacked in natural advantages by his ability to invest more heavily in capital improvements than the Bacons (and most of the rest of his neighbors, for that matter). This was demonstrated by the obvious wealth shown in the census schedules from 1880, which represented probably no more than five years on the land. At that time, George Butterfield was actively managing almost 900 acres, and the total value of his ranch was estimated at \$4000, with \$300 invested in

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<sup>115</sup> Barrows and Ingersoll, *Memorial and Biographical History* (1893), pp. 413-414; and Grace Butterfield Bacon Robinson, "Butterfield Family Album," unpublished ms. (n.d.). [Courtesy of Deborah Melendy Norman.]

<sup>116</sup> George was born in 1834. He had an older brother, William, born in 1833; an older sister, Ruth, born in 1831; and two younger brothers—James, born in 1836; and Charles, born in 1842.

<sup>117</sup> Deborah Melendy Norman, "Butterfield Land," in Deborah Melendy Norman, ed., *South County Pioneers: Version 3.0*, unpublished ms. (compact disc), December, 2008; and "Butterfield Family," in *ibid*.

<sup>118</sup> This eventually grew into one of the largest auction houses in the country. In 2002, it was acquired by Bonhams of England and is now ranked as the third largest art auction house in the world. [From Bonham's website, <http://www.bonhams.com>, accessed 14 August 2007.]

equipment, \$750 in livestock, and a total annual production valued at \$1,400, most of which probably resulted from the ranch's cereal harvest. That year, George Butterfield mowed 20 acres of unirrigated pasture, producing 15 tons of hay. He cultivated 17 acres of barley, which yielded 300 bushels, and 70 acres of wheat, yielding 1,100 bushels. He also harvested ten bushels of apples and 10 bushels of peaches from one-and-a-half acres of orchard lands. He may have harvested other varieties of fruit as well, but the census only recorded apples and peaches. The census that year also indicated that George Butterfield owned ten horses, ten milk cows, 14 beef cattle, 70 swine and 150 poultry. He produced 500 pounds of butter that year, 200 pounds of cheese, and collected 370 dozen eggs. He also harvested 200 pounds of honey (This appears to have been a popular and abundant commodity at the southern end of Bear Valley, since everybody enumerated by the census in this area showed at least some honey production). The figure for cheese is especially interesting, since cheese production was rare in California at that time—only three dairies ever produced marketable quantities in San Benito County during the nineteenth century. Although the quantity produced on the Butterfield ranch was relatively small, it was far more than the amount required for home consumption and indicates a level of capital investment and technological sophistication exceeding what was typical in the small-scale dairy operations of his neighbors.<sup>119</sup>

The house that George Butterfield built on Sandy Creek was considered a showplace for its time among local residents. It was supposedly painted yellow and was two-stories tall, which was considered unusual for the area at that time.<sup>120</sup> It stood on top of a low hill and was reached by a grand stairway consisting of wooden steps terraced into the rock. Mortared, unshaped stones formed a balustrade on either side of these steps. George Butterfield's granddaughter remembers that he called his place the Shorthorn Ranch.<sup>121</sup> The house has since burned down, but traces of the foundation and masonry balustrade remain. Two large walnut trees, several locusts, and two barns also date back to George Butterfield's lifetime.

Thomas Butterfield, always restless, left his ranch on the San Benito River in 1875 and, using his profits from the Angora goat business he and his son James had successfully managed, he invested in a large farm on reclaimed wetlands east of San Francisco Bay. But a series of wet winters destroyed the levees, washing away Thomas' crops and forcing him into bankruptcy by 1879. By this time, Thomas was 73 years old and hardly prepared to undertake any new ventures, but his son George had built up a prosperous operation in Bear Valley and was able to help his father get back on his feet. When the census enumerator came by the following year, he noted that Thomas Butterfield was cultivating 40 acres of his quarter section, with the remainder actively used as pasture. He had mowed six acres in the last year, producing six tons of hay. He had also harvested seven bushels of apples and ten bushels of peaches. This is particularly interesting, since orchard trees require several years at least before they are mature enough to bear fruit. This suggests that the land had already been cultivated before Thomas Butterfield arrived in 1879, possibly by his son George. Thomas' grandchildren remember that his greatest pride, and most prolific harvest, were his Bartlett pears, which the census enumerator did not record. Thomas Butterfield also owned one dairy cow and one beef cow in 1880, as well as 90 poultry. He produced 100 pounds of butter that year, 70 pounds of cheese and 110 dozen eggs. This is the sort of yield one would expect from a healthy, if not prosperous, homestead, but far more than a bankrupt man could be expected to produce without assistance after only one year. Thomas Butterfield later sold this property in 1888—not long before he died—to his grandson Oscar (George M. Butterfield's son), who continued to farm it.

#### *Small Homesteads and Miscellaneous Properties*

During the first generation of settlement in southern San Benito County, the number of homesteaders grew to be very numerous. Families were limited by the Homestead Act of 1862 to a

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<sup>119</sup> U.S. Bureau of the Census, *Nonpopulation Census Schedules for California, Agriculture*, 1880, Bancroft Library.

<sup>120</sup> Manuscript of Bessie Webb, November 2, 1977, PINN 3658, Pinnacles National Park.

<sup>121</sup> From account by Bessie Webb given June 13, 1956 and edited by Ro Wauer, August, 1958, PINN 3658, Pinnacles National Park.

quarter section of land, 160 acres. This allowed many homesteads to be established in a relatively small area, which was the purpose of the act's acreage limitation. Although there were many ways to circumvent this restriction—and some were even legal—only those families which had the economic means to put more land to use actually went to the trouble of acquiring it. Since the land was mostly cultivated by hand during those decades, an individual was physically limited by how much he could reasonably do in a year. He was also limited by the amount of seed he possessed, or could buy, to get himself started. Those who brought with them some wealth—either money or resources like seed grain, livestock and tools, or simply more family members—could get started on a better footing and, if they prospered, might soon out-compete their neighbors who had started with less. Over time, they would have enough surplus to afford hired labor and mechanized equipment to enable them to cultivate larger and larger areas of land. This scenario of steady growth and accumulation describes families like the Bacons and the Butterfields, both of whose holdings increased from an initial quarter section homestead into large, economically diverse farms by the end of the century.

These families would remain and continue to prosper well into the next century, but far more families left Bear Valley by the end of the nineteenth century than stayed. These families had not been able to increase the size of their original homesteads, either because they lacked the necessary resources, or because they could not compete with their more prosperous neighbors (or both). In this arid environment, 160 acres proved too little to sustain a living by farming or ranching alone, so those who were not able to increase the scale of their operation had to find other employment or leave. Some small homesteaders successfully supplemented their agricultural returns by hiring themselves out as laborers on one of the larger farms or by providing a service like drayage.<sup>122</sup> One early resident, who came to Bear Valley in 1886, recalled that,

Bear Valley had quite a few families in the '80s and '90s for, in addition to the larger ranches, there were many homesteads on the hills and in the canyons, mostly on submarginal land.

Arthur Hain quite often would say, in describing those more populous days, that when the school bell would ring the hills seemed to come alive as children on foot and horseback came hurrying to school. By about 1910 most of those little 160 acre homesteads had been abandoned or bought up by adjoining ranches ...<sup>123</sup>

The Homestead Act had been designed to start all settlers on an equal footing by giving each family access to the same amount of land, but so many other factors were involved in determining whether a homestead would be successful or not, that the first generation of many similar-sized farms quickly evolved into a landscape where only a handful of large farms predominated while the majority never grew. Once this pattern was established, the disparity between larger and smaller farms would only increase with time, and the smaller farms became increasingly untenable until at last they were abandoned.

Several of these small homesteaders can be identified in the vicinity of the study area at the south end of Bear Valley (and others probably existed who have left no formal record). Axel Bourgman claimed a quarter section of land at the top of the low pass separating Bear Valley from the Dry Lake Valley to the south. Most of this land is on steep slopes covered in chaparral.<sup>124</sup> Only the eastern corner of Bourgman's parcel was cultivable, though it lacked water, so it is difficult to understand how Axel supported himself with his wife and children. It may have been through hired labor of some sort—his uncle, Charlie Bourgman, was a carpenter, and Axel may have engaged in a similar pursuit. The portion of Highway 25 which climbs a low saddle here to leave Bear Valley is called the Bourgman Grade, after this early homesteader. Not far from Bourgman's homestead was a small parcel owned by a man named Ransom Rose. Rose was a bachelor and lived in this forbidding corner of the valley by himself. His

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<sup>122</sup> For example, Lois Bourke also writes about one the valley's first mechanical threshing machines, which was owned by her father and his brother, that "there were eighteen men on the crew, made up of residents of Bear Valley, especially of the early homesteaders living on 160 acres of land not productive enough to support a family." [Lois Bourke, "Early History," unpublished ms., January, 1961, PINN 3658, Pinnacles National Park.]

<sup>123</sup> Arthur Hain, as recalled many years later by his daughter, Lois Hain Bourke, in "Early History" (1961).

<sup>124</sup> Within Section 33 of Township 16 South, Range 8 East. Bourgman's homestead is part of the land which was added to Pinnacles National Monument in 2006.

situation recalls the observation, noted above, that some of the small homesteaders lacked the means to raise a family. While Rose may have chosen to live by himself for personal reasons, he may also have been forced to do so by economic necessity, since his parcel lacked any potential for development.<sup>125</sup>

Another small homestead at the south end of Bear Valley, near the study area, belonged to Blas Zimmerman. Zimmerman was a Danish immigrant who arrived in Bear Valley toward the end of the 1860s, only a few years after the Bacon family. He settled on relatively marginal land, and it remains something of a mystery how he managed to support a wife and children so successfully. In the 1870 agricultural census, Zimmerman estimated the total value of his homestead at \$500, with \$50 worth of equipment. He owned two horses, but no other animals, and had harvested only 20 tons of hay that year. Ten years later, Blas Zimmerman was actively utilizing 300 acres of land, of which 120 acres was under cultivation. He now owned six dairy cows, 13 beef cattle, ten swine and 12 poultry in addition to his two horses. In the past year, he had mown ten acres, producing ten tons of hay—the low yield was typical of this drier corner of the valley—and harvested 600 bushels of wheat off 40 acres. He had also collected 60 pounds of honey and ten pounds of beeswax, produced 700 pounds of butter and collected 200 dozen eggs.<sup>126</sup> This was a healthy, if relatively modest, scale for a family farm in such a dry land. Blas Zimmerman was not as wealthy or ambitious as some of his neighbors, but the substantial increase in the size and productivity of his homestead over this brief period shows that he had been remarkably successful (though some of his success may have been due to his creative use of local resources, as Joseph Warren Matthews learned one day after helping cattle rancher Edward Breen track a poached steer to Zimmerman's homestead).<sup>127</sup>

Harlow Hill also lived in this chaparral-dominated landscape at the southern end of Bear Valley. Harlow and his sister Cordelia had settled here at some unknown date with their parents, G.P. Hill and Calista Bell, who had both emigrated from Vermont. Harlow eventually became the recipient of the patented land which includes a long, narrow canyon running due east from the George Butterfield homestead to the bottom of Bear Valley, not far from Axel Bourgman's homestead. He (or his parents) built a ranch house in the middle of this canyon and farmed it. Cordelia had the greatest success in the family, since she married the Hills' prosperous neighbor, George Butterfield. How this liaison may have affected Harlow remains unknown, but he was now the immediate neighbor of one of the wealthiest ranchers in Bear Valley and a member of the family. Edith Schmidt, who grew up in Horse Valley just south of here, remembers Harlow as an expert bee keeper.<sup>128</sup> He remained on the family ranch until his death in 1916, after which the property passed to his neighbor, Nelson Page. (The house still appears on maps as late as 1942, though no physical evidence of it remains today).<sup>129</sup>

Within the Pinnacles bottomlands (south of present Highway 25), several small homesteaders also settled. Jonathon Jones was one of the few who actually acquired patent. His quarter section homestead was adjacent to Oliver Bacon's, near Sandy Creek. Jones built a house of whole, unmilled logs at the foot of the hills on the east side of the valley where a series of seasonal springs kept the valley floor moist and swampy during much of the year.<sup>130</sup> The Jones family became attached to the Butterfields and the Hills when Samuel A. Jones, possibly Jonathon's son, married Harlow Hill's daughter Mabel in 1897. The ceremony took place at George Butterfield's house with Fred Prewett acting as best man and Cora Miller as bridesmaid. Jonathon Jones died in 1901, but his property remained in the possession of his heirs until it was sold to George Bacon in 1969. The house had been abandoned by the time of the 1931

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<sup>125</sup> "Mrs. Edith Schmidt Presents a History of Bear Valley and Some of its Residents," *Hollister Free Lance*, Oct. 2, 1963, et seq.; *Abstracts*, FTIC.

<sup>126</sup> U.S. Bureau of the Census, *Nonpopulation Census Schedules for California, Agriculture*, 1870 and 1880, Bancroft Library.

<sup>127</sup> Matthews, "Diary," Bancroft Library.

<sup>128</sup> Horace Bacon's daughter, Edith Schmidt, wrote of visiting the Hill Ranch as a young girl: "Mr. Hill was a bee keeper and I can clearly remember the beautiful sage honey in the comb that my family purchased from him." [Edith Bacon Schmidt, "The History of Bear Valley and Residents," unpublished ms., 1963, San Benito County Historical Society, Hollister, CA.]

<sup>129</sup> Park base map with hand-drawn annotations, dated 1942, PINN 3658, Box 42, f. 22, Pinnacles National Park.

<sup>130</sup> Bessie Webb, Nov. 2, 1977, PINN 3658, Pinnacles National Park.

fire and may have been abandoned when Jones died in 1901. A stone foundation remained to mark its location until recently, but in the early 1980s, Stu Kingman expanded his campground and eradicated the last traces of the homestead. According to local memory, the ruins lay in the third circle of the Pinnacles Campground.<sup>131</sup>

Another small homestead within this area belonged to the Lange family. Gustav Lange was a German immigrant who purchased the land from Paul Strauss, who received patent to the land in 1893. (It is unlikely that Strauss himself ever lived here, except for purposes of proving title). The quarter section parcel begins at the intersection of Highway 146 and Highway 25 and continues south for a half mile on 146, extending about a quarter mile to either side of the road.

Little is known about the Langes, except that they had been living in California since 1889. Their farm was never enumerated in any census. However, an early photograph shows that their house was relatively substantial—a one-and-a-half story wood-frame structure with cross gables. It stood next to an oak tree just west of the entrance road that later became Highway 146, near the northern border of their property. Both the house and the oak are now gone, but remnants of the foundation, concrete steps, and some porcelain fragments mark the site. The Langes had four children, all of whom went away for school. Gustav Lange died in 1909 at the age of 70. His wife was murdered in their house five years later by a young man who thought she was wealthy. As it turned out, she had practically nothing.<sup>132</sup> After Mrs. Lange's death, the ranch was leased out and farmed by neighbors. The Lange children later sold the ranch to Ben Bacon in 1917.<sup>133</sup>

There were undoubtedly other small homesteaders who remain unknown. Evidence of their existence is suggested, for example, by mention of the Barry cabin, which homesteader Viggo Petersen occupied in the early 1920s. This small structure stood on Chalone Creek near the present Chalone Creek Bridge within Pinnacles National Park. Barry was remembered as a hermit and never filed any formal claims for his property. A similar cabin stood at the foot of Rose Canyon, just south of George Butterfield's ranch house. Like the Barry cabin, this structure is remembered only because it was occupied by a later homesteader who filed a formal claim on the land—in this case, Elizabeth Bacon. She occupied the cabin in 1890 and described it in her claim affidavit but gave no details regarding its original owner.<sup>134</sup> These chance descriptions of informal improvements suggest that many more settlers may have occupied this region at an early date without leaving written records of their activities.

### **Growth in Scale (1880-1890)**

As the century approached its end, a handful of individuals, after accumulating very large holdings, came to be uniquely associated with specific parts of southern San Benito County, which they dominated. Within the study area at the southern end of Bear Valley, Ben Bacon became the most significant land-holding member of his family. The youngest of Elizabeth Bacon's children, he was also the only one to be born here. Ben homesteaded 280 acres on Chalone Creek just south of his mother's original parcel. This land, which was not patented until 1910, lay on the confluence of Sandy and Chalone Creeks, extending downstream to the border of the land his father Myron later homesteaded and up Sandy Creek to the border of his brother Oliver's homestead opposite McCabe Canyon. It also extended up Chalone Creek about as far as Peaks View on the pre-2006 boundary of Pinnacles National Park. In 1897, Elizabeth Bacon deeded Ben the original Bacon family home ranch, which had been filed in her name. By this time, Elizabeth must have been living on the homestead she had recently claimed at the southwest side of the valley. Ben was still living on the original home site at this time but may have built a

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<sup>131</sup> Hollister *Free Lance*, Dec. 31, 1897.

<sup>132</sup> Reta Oberg, *Administrative History of Pinnacles National Monument* (Paicines, CA: National Park Service, Pinnacles National Monument, 1979), pp. 117-19; Edith Bacon Schmidt, "The History of Bear Valley and Residents," typescript of lecture given before the San Benito County Historical Society in Bear Valley, August 28, 1963, San Benito County Historical Society, Hollister, CA.

<sup>133</sup> *Abstracts*, FTIC.

<sup>134</sup> Land file affidavit, quoted in Norman, "Shells, Quigleys, and Bacons" (2005).

new house when he married Orea Burns in 1894.<sup>135</sup> This house is still extant, though modified. Ben continued to acquire property on Sandy Creek up until a few years before his death in 1939. By that time, he was the largest rancher at this end of Bear Valley, owning all but a small portion of the Pinnacles bottomlands south of Highway 25.

A close neighbor of Ben Bacon, Nelson D. Page, also accumulated a large holding during these decades. Page had arrived sometime after 1870 so was not enumerated in the agricultural census for that year, but the 1880 census indicates that the scale of his production, even after relatively few years in Bear Valley, had already grown to become comparable with that of his prosperous neighbors. Page was actively using about 350 acres of land by that time, 40 of which were under cultivation, 300 acres were devoted to pasture, and the remainder was reserved as woodlot. During that year, Page mowed six acres to produce three tons of hay, harvested 40 bushels of barley off 18 acres of cultivated land, and cut ten cords of wood. This was an unusually meager yield—approximately half of what his neighbors were getting—and suggested that Page's land may have been poorer in quality or possessed less moisture. Page also harvested 70 pounds of honey that year and five pounds of beeswax, produced 100 pounds of butter and collected 160 dozen eggs. He owned 12 horses, two mules, two milk cows, three beef cattle and 60 poultry.<sup>136</sup> But Nelson Page also worked as a teamster, frequently hauling loads of redwood lumber over the mountains from the Santa Cruz area. (This is why he had so many horses.) This contract labor provided him an additional source of income to compensate for his low agricultural yield and allowed him to expand the size of his ranch substantially over the next few decades in spite of its meager productivity. By 1909 he had acquired all of Blas Zimmerman's adjacent homestead and eventually owned more than 880 acres, including most of the northwest corner of what is now the National Park.

#### **A New Century and the Next Generation (1890-1940)**

The pattern of land consolidation which had begun within a generation of the first American settlers during the mid-nineteenth century continued into the early twentieth, as the rural economy of southern San Benito County focused increasingly on pastoralism and gradually became tied to export markets outside the immediate area. Although this transformation had begun somewhat earlier, it was greatly stimulated by the European demand for agricultural products during World War I. As production slowly shifted from subsistence to profit, the original homestead economy gave way to large ranches on which a market-oriented pastoralism could dominate. Livestock and poultry were now raised for sale, rather than consumption, while cereal grains were cultivated for export as animal feed. New technologies—mechanized harvesters and tractors—allowed greater areas of land to be farmed, so that ranchers could raise their own feed or sell their surplus to other ranchers outside Bear Valley. But the comparative remoteness of Bear Valley necessitated that its residents remain self-sufficient, and they continued to produce a diversity of basic goods in small quantities to meet their own needs even as they were also producing large quantities of a few specialized goods for sale. As a result, essential aspects of the original homestead economy persisted well into the twentieth century, as did the way of life associated with it.

#### ***The Ben Bacon Ranch***

By the beginning of the twentieth century, most of the first generation homesteaders had passed away, or soon would. Myron Bacon had already died by 1890. His land later passed to his youngest son Ben. Elizabeth Bacon lived just long enough to see in the new century. She died in the fall of 1901 at the age of 73 years. Her will divided her estate among her children, but all of her land was eventually acquired by Ben. George Butterfield was the next to pass away. He died of pneumonia in 1905 at the age of 70. His prosperous estate passed to his widow, Cordelia Hill Butterfield, who lived here with her son Eben Thomas for another ten years. In 1915, when Cordelia was 76 years old, she sold the Butterfield Ranch to Ben Bacon. Her brother, Harlow Hill, had died only two years earlier, in 1913. Nelson Dudley Page added Harlow's homestead to his own extensive holdings, which already included Blas Zimmerman's

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<sup>135</sup> Orea had come to California in 1886 with her sister Flora and brother Robert. She was related to the Sevenmans through her niece, who married Ernest Sevenman.

<sup>136</sup> *Agricultural Census Schedules*, 1880, Bancroft Library.

old ranch, but over the next ten years, Nelson Page began to diminish in vigor. His wife Eliza died sometime around 1923, and shortly afterwards, Nelson was paralyzed from the waist down when a bull pinned him against the wall of his milking barn. He spent the rest of his life in a wheelchair, tended by his daughter Josephine, who had married George Butterfield's nephew and was living on the original Thomas Butterfield homestead just north of Highway 25. Nelson Page died in 1927, at 82 years of age.<sup>137</sup> The vast acreage he had assembled during his active life was then purchased by Ben Bacon as well.<sup>138</sup>

With these successive acquisitions, Ben Bacon became the owner of the largest ranch on the south side of Bear Valley. He now controlled all of the area comprising the Pinnacles Bottomlands, excepting only the large Sevenman parcel (the current Regan property) and his brother Oliver's land on McCabe Canyon. But these exceptions were both part of the family. Ernest Sevenman was related to Ben through his wife Ruby, who was Orea Bacon's niece. The Sevenmans had originally claimed this large parcel in the early thirties at the request of Ben and Orea Bacon in order to prevent the land from being settled by another person the Bacon family did not like. (The family no longer remembers the name of this person.)<sup>139</sup> The Sevenmans continued to live in Hollister and used their homestead on the Pinnacles Bottomlands as a hunting lodge and weekend retreat, so much of this land was less intensively exploited than the adjacent lands on the Butterfield and Bacon Ranches.

Ben also made a small addition at the far southern end of his ranch in 1927. This 240 acre parcel lay just east of Myron Bacon's old homestead along Chalone Creek. It was patented by Henry Joice, whom Ben had used as a "straw man" to obtain the land. This was a common practice throughout the American West and occurred frequently in Bear Valley.<sup>140</sup> A wealthy landowner would hire another individual to claim a desired parcel, with a prior arrangement to turn that land over to him once it was patented. The claimant would fulfill the terms of the claim, living on and working the land for the requisite number of years. At the end of this time, he would be paid for his efforts and turn the land over to the person with whom he had originally (and secretly) contracted. Henry Joice appears to have had an arrangement like this with Ben Bacon, suggested by the fact that he deeded the land over to Ben on the same day he received patent to it.<sup>141</sup> Henry had had to live on this parcel for five years and make at least minimal improvements to it. This included building a small cabin and cultivating at least some of the land or running livestock on it. Although these activities would have had relatively little impact, traces of his homestead have been found. It was first documented in 1980 and given the site number CA-SBn-118H.<sup>142</sup> At that time, investigators found a road trace, building pad, cookstove fragments and portions of a barbed wire fence. It was revisited in 2007, and the road trace and building pad were once more located. Wire scarring on one of the trees was also noticed, as was a shallow depression which could have been the

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<sup>137</sup> Robinson, "Butterfield Family Album."

<sup>138</sup> In 1937, Ben subdivided the Page Ranch with Arthur James Smith. This arrangement appears to have coincided with the realignment and upgrading of Highway 25. The new highway became the property boundary between Ben ranch and Arthur Smith's Bear Valley Ranch. Smith now owned that part of the old Page ranch which lay north of the highway, which included the ranch core itself, while Ben owned that which lay south of it. [Abstracts, FTIC.]

<sup>139</sup> Tim Regan (grandson of Ernest Sevenman), interview by author, March 19, 2007. Ernest Sevenman received patent to this 440 acre parcel in September of 1934. Through later additions, the property has grown to its present size of approximately 600 acres.

<sup>140</sup> A similar arrangement between Henry Melendy II (Henry Melendy's oldest son) and Judson Jacque is well-documented. Jacque was a solitary man by nature and lived in a small homestead cabin in the hills just west of the Melendy Ranch. He patented this land in 1936 and immediately sold it to Henry Melendy. Jacque continued to live here for some years and often worked for other ranchers around the area, like Fred Schmidt used him as a ranch hand whenever there was work to do or money available to pay him. [Stanley F. Schmidt, "The Frederick T. Schmidt Family, from 1889 to 1955," in Deborah Melendy Norman, ed., *South County Pioneers: Version 2.0*, unpublished ms. (compact disc), December, 2005, pp. 5.10-12.]

<sup>141</sup> The parcel totaled 240 acres, comprising the northwest quarter and the north half of the southwest quarter of Section 7, Township 17 South, Range 8 East. It was patented to Henry Joice on March 12, 1927 and deeded to Ben Bacon the same day. [Abstracts, FTIC.]

<sup>142</sup> Hampson and Wilfong, Site Survey Form, in *Cultural Resources Inventory of Newly Acquired Lands at the Pinnacles National Monument: Site Record Data* (Castroville, CA: Archeological Consulting, 1980).



remains of either a hand-dug well or a root cellar. This is one of the few instances in the local area where such a primitive homestead site has actually been identified.

#### *Oliver Bacon's Ranch*

In 1910, Oliver Bacon sold 40 acres of his land south of the road to his brother Ben.<sup>143</sup> In 1926, when Oliver died, the remainder of his property, most of which lay in McCabe Canyon, passed to his younger brother Horace. Horace was the local school teacher in Bear Valley. Since he and his wife had their own house near the Bear Valley School a few miles north of the Pinnacles Bottomlands, they probably never actually resided at Oliver's place, though they may have leased it. After Horace's death in 1929, his wife Nettie Smith Bacon retained possession of the McCabe property for awhile but then deeded it to her youngest son George and his wife Pearl Towle in 1937.<sup>144</sup> (The property remained on Horace's side of the family until it was finally sold to the National Park Service in 2000.) In February of 1935, some six years after Horace's death, the San Benito County Sheriff arranged a public ceremony to commemorate the once-popular school teacher. At least two redwood trees (*Sequoia sempervirens*) were planted at the bottom of McCabe Canyon. One of these has done quite well and is now a mature tree of considerable height. It grows on the south bank of McCabe Creek near the mouth of the canyon (opposite [REDACTED] house). The other tree, which was planted at the edge of the wetland below Oliver Bacon's springbox, has suffered repeated die-backs and now resembles a stunted bush rather than a tree, but it is still living.<sup>145</sup> Sometime later, but exactly when is not certain, Oliver's small house became the home of Pancho Garcia, a single man of either Mexican or Native American descent. He was definitely living here by the late 1940s, when he became a friend and hunting companion of Fred Schmidt, who frequently visited Pancho during the last ten years of his life.<sup>146</sup> Fred died in 1955, and after Pancho's own death sometime later, Oliver's house gradually deteriorated. Stu Kingman finally demolished it around 1980, because it had become a hazard for visitors staying in his campground. One outbuilding, a small shed, was salvaged and moved across the road to [REDACTED] house. It is still standing but has been sheathed in corrugated iron and is now being used as a tool shed.<sup>147</sup>

It was around the time of Horace's death in 1929 that the Bacon family picnics were moved to McCabe Canyon. By then, the Bacons and the Schmidts (of Horse Valley) had been united following Fred Schmidt's marriage to Edith Bacon, the daughter of Horace and Nettie Bacon. These family picnics had been an annual tradition for decades. Prior to Oliver Bacon's death, they had been held on the Chalone Bench. A spacious grove of large valley oaks grew here, making it a natural place for summer gatherings. The bench was officially owned by Ben Bacon after 1910, when he was granted a homestead patent to the land, but it had always been used by the entire Bacon family and was considered part of the home ranch from earliest times. It lay just a little south of the Bacon family house and could be reached easily by wagon or, later, by automobile.

Nobody remembers why the annual picnics moved to McCabe Canyon. It may be that Nettie Bacon took over hosting the event, or possibly that George and Pearl did, although they lived in Hollister. George and Pearl's grandson, [REDACTED], still remembers going to the picnics in McCabe Canyon as a young boy. According to him, the families would gather under an immense live oak about half-way up the canyon a little above the uppermost spring.<sup>148</sup> Just getting to the site was part of the day's adventure, since most of the revelers would park their vehicles down by Oliver's house and stroll the remaining mile or so up the canyon on foot. Mark's uncle, Charley Francis, used to hide bottles of liquor and other refreshments in the grove of valley oaks just below the picnic oak, so that he could surprise weary hikers with these unexpected treats, drawn with a flourish from the bole of a tree or from behind a rock. A sign

<sup>143</sup> Abstracts, FTIC. This land was immediately adjacent to Ben's and may have contained another residence.

<sup>144</sup> Nettie Smith Bacon lived until 1956, presumably in the house she had built with Horace next to the Bear Valley School.

<sup>145</sup> Stanley Schmidt, "Horace Bacon" (2005), p. 12; Unpublished corr., M.P. Hubler, San Benito County Sheriff, to Mrs. H.G. Bacon, February 7, 1935. [courtesy of Greg Schmidt].

<sup>146</sup> Stanley Schmidt, "Schmidt Family" (2005), p. 6.16.

<sup>147</sup> [REDACTED], interview by author, April 24, 2007.

<sup>148</sup> This oak was still living and healthy as of April, 2007.

made of letters cut from pie tins is still hanging on one of the large valley oaks, reading "4 Oaks Inn," a humorous reference to the rustic hospitality of this "innkeeper."<sup>149</sup>

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Ben Bacon died in 1939 at the age of 72, and two years later, in January of 1941, his wife Orea was drowned while making repairs on the bridge over Sandy Creek after a winter storm. Ben and Orea had been the last of the homesteading generation to live on Pinnacles Ranch, and their passing marks a decisive change in the history of the region. Future residents or tenants of Pinnacles Ranch would never again attempt to practice a homestead economy of diversified small-scale agriculture as the Bacons had once done. Instead, the land would be used primarily for livestock grazing in cow-calf operations, though some cultivation for hay or grain was practiced for at least a decade after the war.<sup>150</sup> Apart from the introduction of exotic weeds—most notably, yellow star thistle (*Centaurea solstitialis*)—this later period of land use did little to alter the character of the Pinnacles Bottomlands from its appearance during Ben Bacon's life, largely because grazing involved far less intensive use of the land than the homestead economy. Following Orea Bacon's death, the Bank of America, which held a mortgage on the ranch, planned to dispose of the extensive property through public auction. One of those interested in acquiring all or part of the ranch was W.I. Hawkins, custodian of Pinnacles National Monument. He wrote to remind his regional director that about 600 acres of Ben Bacon's ranch—essentially all of the property which lay along Chalone Creek south of the confluence with Sandy Creek—had recently been identified in a Master Plan as desirable for addition to the monument.<sup>151</sup> The Park Service wanted this land because of its appropriateness for recreational development, either as a campground or picnic area or even for a small resort. The Chalone Bench, which lay at the north end of this corridor, was the most natural candidate for such development and had been recognized as an ideal picnic area by local residents long ago. Hawkins believed that the parcel could be acquired for between \$3,000.00 and \$5000.00, which even at that time was quite a bargain.<sup>152</sup> The regional director agreed with Hawkins and forwarded his recommendation to Washington, but unfortunately for Pinnacles National Monument, other commitments prevented the Park Service from acting quickly enough. Before long, the entire Bacon Ranch—not just the 600 acres on Chalone Creek—was sold to Ray Marcus, a wealthy man from out-of-town who wanted to build a retirement home on the property.<sup>153</sup> (Marcus never built his home, but instead leased the land out for grazing). As Ray Marcus had no interest in negotiating with the National Park Service, Pinnacles lost its opportunity to acquire this land and would not have another chance for more than fifty years.<sup>154</sup>

#### Post-War Rangeland Management (1946-1977)

World War II was an important turning point for rural life in southern San Benito County. The war effort provided supplemental jobs for many local farmers who could no longer support themselves on agricultural production alone. It also created opportunities which drew many farm children away from rural life. Just as important, the conclusion of the war marked the beginning of significant state and federal involvement in rural land management programs.<sup>155</sup> In 1946, the Range Improvement Program of

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<sup>149</sup> [REDACTED], interview by author, April 24, 2007.

<sup>150</sup> Evidence for cultivation of Pinnacles Ranch during this period comes from aerial photographs taken in 1949. They show row crops—probably cereal grains—extending from the Butterfield Ranch up the east side of the canyon to Highway 25. There is no evidence of any cultivation in the southern half of the valley.

<sup>151</sup> Master Plan, August 15, 1940, Pinnacles Museum, Pinnacles National Park.

<sup>152</sup> Hawkins to Reg. Dir., Feb. 21, 1941, PINN 3658, Box 22, f. 18, Pinnacles National Park. This translated to between five and eight dollars an acre. Given that the land possessed abundant water and tillable land, these were extraordinary rates, and Hawkins may have been mistaken or overly optimistic in estimating them.

<sup>153</sup> Marcus bought the entire property for \$20,000.00, still a bargain at less than \$10.00 an acre.

<sup>154</sup> Regional Director to Director, Feb. 26, 1941, PINN 3658, Box 22, f. 18, Pinnacles National Park.

<sup>155</sup> Many of these programs originated during the Depression prior to the war but began to have a significant effect in southern San Benito County only afterwards.

the California Division of Forestry (CDF) was established by an act of the state legislature. Receiving active support from the University of California's Agricultural Experiment Station and the county Farm Advisor, the primary objective of this program was to research techniques for increasing the extent and quality of grassland for livestock grazing. In the arid hill country of the upper San Benito watershed, this primarily meant clearing chaparral.<sup>156</sup> At the time, it was believed this would result not only in more pasturage for livestock but also increase the amount of available water in streams and ponds as well as reducing fuel loads that could sustain potentially destructive fires.<sup>157</sup>

In southern San Benito County, the CDF's Range Improvement Program quickly found a sympathetic response, and by the early fifties Bear Valley ranchers had established their own Rangeland Improvement Association.<sup>158</sup> The principal organizers, and the most active members, were Jef Schmidt and Walter Melendy, assisted by San Benito County Farm Advisor Rocky Lydon. Their personal interest was conversion of the local chamise-dominated chaparral to grassland in order to improve grazing for livestock (both men were primarily cattle ranchers). No mention was ever made of watershed conservation, though this remained one of the official objectives of the larger program. Bear Valley ranchers were also concerned with fuel load reduction as a means of lessening the threat of dangerous wildfires, and they were interested in the improvement of game habitat for hunting, which they believed was enhanced by thinning the chaparral.<sup>159</sup> The preferred method of local ranchers for treating the chaparral, at least initially, was mechanical.<sup>160</sup>

Jef Schmidt's father, Fred Schmidt, had purchased a TD-14 tracked bulldozer shortly after the war, and the two of them cleared several hundred acres during the late 1940s in the hills above both Horse Valley and Bear Valley. They would knock down the brush with the bulldozer blade and scrape it into piles, where some was burned and some left as cover for game birds like quail.<sup>161</sup> Later, Jef Schmidt began cooperating with his neighbor, Walter Melendy, who now managed the original Melendy family ranch at the top of Bear Valley. Walter owned a Caterpillar D-8 tracked tractor with a blade attachment. Like the Schmidt's TD-14, this machine could be used very effectively for knocking down brush on level ground and hillslopes not exceeding about 20 percent. But neither tractor could be used on the steeper slopes further back in the hills above Bear Valley, where the gradient often exceeded 50 percent. For these places, Jef and Walter devised a novel method using a steel buoy dragged behind the bulldozer at the end of a long chain. The operator would drive along the top of ridges, and the buoy would roll along

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<sup>156</sup> U.S. Dept. of Agriculture, *The Work of the California Forest and Range Experiment Station* (Berkeley, CA: U.S. Forest Service, 1951); California, "Controlled Burning, Brushland Reconversion," in *Joint Report of the Senate Interim Committee on Forest Practices—Senate Resolution 190, 1957—and the Senate Interim Committee on Economic Redevelopment of Cutover Timber Areas and Brushlands—Senate Resolution 164, 1957* (Sacramento: Senate of the State of California, 1959); and California, *The Range Improvement Program Annual Report, 1959* (Sacramento: California Department of Natural Resources, Division of Forestry, 1959).

<sup>157</sup> One influential report summarized research done in the San Gabriel Mountains of Southern California following a large fire which had denuded the hills of their chaparral cover. Comparing the subsequent streamflow in this watershed with an adjacent watershed that had not been burned, the researchers concluded that dry-season surface water had increased by 475% over a six year period as a result of chaparral removal. [W.G. Hoyt and H.C. Troxell, "Forests and Stream Flow," *Proceedings of the American Society of Civil Engineers* 99 (1934): 1-111.]

<sup>158</sup> California, *Range Improvement Program, Annual Report* (1962), p. 15. Kathy Spencer, Jef Schmidt's daughter, thought that local ranchers had organized the association as early as 1951, but the CDF's own records do not show any formal organization existing in San Benito County until 1963. The discrepancy may be owing to the fact that Bear Valley ranchers like Jef Schmidt were active in the new program much earlier than they were formally organized. [Kathy Spencer, interview by author, Mar. 20, 2007.]

<sup>159</sup> See *Range Improvement, Annual Report* (1964), p. 15: In Central Coast District, winter strip burning being conducted for game habitat improvement; and 1965, p. 13: Increasing interest in control burns for game habitat improvement. "There were no burns with the sole purpose of game habitat improvement, but more ranchers indicated this as a secondary purpose of burning. As the value of hunting rights continues to climb, more burning for wildlife management can be expected."

<sup>160</sup> California, *Range Improvement Program, Annual Report* (1962), p. 15.

<sup>161</sup> Stanley Schmidt, written corr. with author, n.d.

one side of the hill below him, dragging the chain through the brush on the steep hillside and knocking it down. The buoy was filled with water to add weight and to reinforce it against the impact of rolling and smashing against debris.<sup>162</sup> The ball was a submarine net buoy and the chain was an anchor chain, both surplus military equipment which the men had acquired on a trip down to the naval yards in San Diego. Stanley Schmidt later observed that the land cleared by bulldozers in Horse Valley during the late 1940s and early 1950s has remained open "...with lots of feed for cattle when we have a good winter." But the later burns which were conducted in Bear Valley have all begun to grow back into brush.<sup>163</sup>

The buoy and chain method left torn scrub scattered haphazardly across the hillsides, rather than being scraped into windrows, so further treatment was necessary to clear the landscape. This was done by a controlled burn, usually during the year following the initial mechanical treatment to allow the chained brush to dry. Burning was encouraged by the CDF as the preferred treatment for chaparral conversion but had been resisted by ranchers around Bear Valley during much of the first decade of the program. The reports never explained this initial aversion to fire, nor do local testimonies mention it. Perhaps concern over the danger of wildfires, which have always been a threat in this region, produced the initial hesitation, but growing enthusiasm for the program and the expansion of the treatment area into terrain where mechanical methods alone were insufficient finally convinced South County ranchers to begin burning.

By the time Jef Schmidt and Walter Melendy had introduced their ball and chain method, the adoption of controlled burning was more-or-less decisive. This would have been sometime during the 1960s, but the first large burn to occur in the vicinity of Bear Valley happened in 1952, when the Melendy sisters, Charlotte Melendy Berberick and Lila Melendy Elliott, hosted a burn on their extensive property at the foot of the Bear Valley Grade. This fire was intended to burn 6,560 acres—an extremely large area to manage—but it escaped its perimeter and consumed an additional 525 acres on non-permitted lands. Walter Melendy was the designated fire boss and his wife, Clara Lou Melendy, recalls that the experiment proved to be an enormous burden on the men assigned to manage it. Nevertheless, it was judged to be a success. Although subsequent controlled burns would be much smaller, the Melendy burn established a precedent which would be followed enthusiastically by South County ranchers for the next two decades.<sup>164</sup>

While mechanical removal and controlled burns drew the most attention in the Range Improvement Program because of the drama associated with them, these methodologies were only a small part of the overall strategy for brushland conversion. Equally important, but far less glamorous, was the reseeding program, which experimented with a variety of new grass species to replace woody natives after they were removed. Early trials described in the annual reports included Harding grass (*Phalaris aquatica*), perennial rye (probably Italian ryegrass—*Lolium perenne*, ssp. *multiflorum*), and Lana vetch (*Vicia villosa*). Later research at the San Dimas Experimental Forest in southern California would include perennial veldt grass (*Ehrharta calycina*), so this species may also have been seeded in chaparral conversion trials, though no records have been found to confirm it.<sup>165</sup>

Between 1945, when the program was initiated, and its conclusion in 1977, a total of 73 controlled burns were conducted in San Benito County for the purpose of brushland conversion. Of these, 55 occurred in the general vicinity of Bear Valley and Pinnacles National Monument.<sup>166</sup> Mechanical treatment of brush was also carried out, sometimes as a pretreatment prior to burning, at other times as an independent treatment. Reseeding was frequently conducted as a follow-up to facilitate type conversion to grassland. It is worth noting that during this same time period, the National Park Service maintained a policy of total fire suppression, which it had been successfully practicing since at least 1933, when Civilian Conservation Corps enrollees provided Pinnacles National Monument with sufficient staff to

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<sup>162</sup> Richard Gilbert and Jef Schmidt, "Ball and Chain Brush Crushing," *Range Improvement Studies* 19 (1970): 1-8.

<sup>163</sup> Stanley Schmidt, written corr. with author, n.d.

<sup>164</sup> Clara Lou Melendy, interview by author, Mar. 21, 2007.

<sup>165</sup> Tanja N. Williamson, Robert C. Graham and Peter J. Shouse, "Effects of a Chaparral-to-Grass Conversion on Soil Physical and Hydrologic Properties after Four Decades." *Geoderma* 123 (2004): 99-114.

<sup>166</sup> U.S. Forest Service, "Vegetation Management Alternatives for Chaparral and Related Ecosystem Research and Development Program Charter," Jan. 29, 1976, PINN 3658, Box 25, f. 12, Pinnacles National Park.

implement the policy for the first time. As neighboring land management practices increasingly diverged from the Park Service's preservationist approach, the monument began to look like an island of dense scrub surrounded by relatively open grassland and mixed vegetation.<sup>167</sup> This contrast is still apparent in many places along the borders of Pinnacles National Park.

By the late 1960's, even as enthusiasm for rangeland improvement was increasing, new interests were emerging in post-war America which would negatively affect the program's successful continuation. One early indication of these changes came with the passage of the Air Quality Act of 1967, which established regional Air Pollution Control Districts and limited the ability of rangeland managers to light fires because of the smoke which they produced. The regulations passed in 1967 required that the Division of Forestry provide notification to the Bay Area Air Pollution Control District (BAAPCD) 45 days in advance of each range improvement burn, and the BAAPCD had to approve each burn prior to its implementation.<sup>168</sup> This added level of bureaucracy, and the restrictions which ultimately resulted, had a chilling effect on the Range Improvement Program, which had come to depend on fire as its principal tool. However, CDF rangeland managers soon responded by emphasizing alternative methods for achieving the same results. Mechanical treatment became increasingly more important for the initial removal of chaparral, but herbicides, rather than fire, now became the dominant follow-up treatment. The CDF began recommending the application of chemicals like 2,4-D (2,4-Dichlorophenoxyacetic acid) and 2,4,5-T (2,4,5-Trichlorophenoxyacetic acid) to replace fire as a means of eliminating the resprouting root stock of brush which had been pretreated mechanically. It also began experimenting with new machines which aggressively tilled the earth several inches below the surface, destroying brush root crowns by mechanical means (but also creating substantial soil disturbance and aggravating erosion).<sup>169</sup>

Although cooperation between private ranchers and state employees in the CDF and associated government land management agencies increased as a result of increasing environmental legislation, this only gave the illusion of greater range improvement activity. In fact, range improvement was on the decline. The last range improvement burn recorded for San Benito County occurred in 1976, and the program was abandoned the following year. Air quality concerns were not the only reason for its demise. The decline of the agricultural and pastoral economies in this area was also to blame. But even more important was the transformation of the rural economy to an increasingly urban orientation. With this change came not only rising property values, which threatened the economic viability of agriculture and pastoralism, but fundamentally different attitudes about rural life itself. As California's growing post-war population brought the city and suburbs closer to the South County, the interests of this new urban majority began to compete directly with those of the dwindling rural minority, and new values—based in aesthetics, environmental quality and recreation—increasingly guided land management decisions.

### **Prescribed Burning at Pinnacles National Monument (1977-1982)**

The National Park Service's policy of complete fire suppression gradually began to shift during the early 1960s, beginning with the 1963 Leopold Report, which was the first endorsement of wildland fire use to have a significant influence within the agency.<sup>170</sup> When the Directorate released its guidelines for the implementation of this report in 1965, it addressed the issue of fire's potential benefit, though with some ambivalence:

Resolving the question of using fire beneficially versus the customary impression that all fires are bad is difficult. Fire is a natural agent, it is likely to be inexpensive [as a tool for management] and it can be used without mechanical scarring of the landscape. The thought

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<sup>167</sup> Dean Clark (Forestry Technician for Pinnacles National Monument during late 1970s), convers. with author, Mar. 30, 2008.

<sup>168</sup> California, *Range Improvement Program, Annual Report* (1968), p. 18.

<sup>169</sup> California, *Range Improvement Program, Annual Report* (1971), p. 21.

<sup>170</sup> A. Starker Leopold, "Wildlife Management in the National Parks," in James B. Trefethen, ed., *Transactions of the Twenty-Eighth North American Wildlife and Natural Resources Conference* (Washington, DC: Wildlife Management Institute, 1963); and Richard Sellars, *Preserving Nature in the National Parks: A History* (New Haven, CT: Yale University Press, 1997), pp. 255-58.

of deliberately setting fires regardless of the so-called advantages and the fact fires were common in the early history of the land is contrary to well-established customs and attitudes.<sup>171</sup>

Nevertheless, the Directorate's guidelines concluded that the "National Park Service accepts prescribed burning as a management tool," provided that its use would be limited within narrowly-defined conditions. It was this very hesitant endorsement which allowed Pinnacles National Monument to recommend prescription burning in its 1966 Resource Management Plan, even though it was still not possible to actually implement such a program, as the plan regretfully acknowledged. But in 1968 everything changed when the National Park Service adopted a new wildland fire policy which included both "let-burn" and prescription burning as management alternatives in addition to suppression. The Service's first prescription burns were ignited later that year in Sequoia National Park.<sup>172</sup>

In 1973, as Pinnacles began developing its new Master Plan, Superintendent Rod Broyles and his staff discussed implementing the prescribed fire program which had been tentatively proposed five years earlier. Regional Chief Scientist O.L. Wallis supported the idea and encouraged Pinnacles to adopt such a program as a long-range resource management objective but cautioned the park not to begin implementation before adequate research was undertaken.<sup>173</sup> Wallis' caution reflected just how little was then known in the Service about fire ecology and the management of chaparral vegetation.

Two years later, on December 4-5, 1975, Pinnacles' hosted a seminar to discuss and formulate a program for chaparral management with fire. In addition to relevant Pinnacles staff, the seminar included Chief of Resource Management Bill Orr from the regional office in San Francisco; research scientists Peter Bennett from Grand Canyon NP, Jan Van Wagdendonk from Yosemite NP, and David Parsons from Sequoia NP; San Benito County Farm Advisor Rocky Lydon; rancher Jef Schmidt from the local Range Improvement Association; several representatives from the California Division of Forestry (CDF); and Dr. Harold Biswell, a noted fire ecologist at the University of California, Berkeley. The inclusion of Rocky Lydon, Jef Schmidt and the CDF representatives was an important gesture acknowledging the local tradition of using fire as a landscape management tool, but the seminar made clear that the objectives of the Range Improvement Association and the National Park Service were not the same. Since the purpose of the Association was to convert scrub to grassland, its methods were designed to actually kill the chaparral bushes. Plants were chained into dense windrows, which fueled intense fires hot enough to destroy the roots of remaining plants. By contrast, the Park Service would employ no mechanical means of removal and would instead ignite many small, relatively cool fires which would burn only the superstructure of the plants, leaving the roots and root crowns intact to produce healthy regrowth. It was believed that this sort of burning was typical of the pattern which had existed prior to historical interference in the natural processes. As Superintendent Broyles observed, "The objectives are to restore the area to the natural state that it would have been had there not been interference with the natural event of fire."

Restoration of natural conditions was the Park Service's primary objective in reintroducing fire, but the Service also hoped to reduce the threat of dangerous stand-replacing conflagrations. Such intense fires seemed increasingly likely with the accumulation of dense fuel loads after years of successful fire suppression. These two objectives were closely related, as Dr. Harold Biswell and other resource managers noted, because the natural conditions they assumed had existed prior to historic fire suppression efforts had prevented the over-accumulation of fuel. Thus, the restoration of natural conditions would simultaneously improve ecosystem health and increase visitor safety. Resource managers assumed that the primitive (natural) environment included frequent but relatively cool, non-life-threatening fires.

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<sup>171</sup> "Guidelines for Resources Management in the Areas in the Natural Category of the National Park System," Assistant Dir. to All Field Offices, Oct. 14, 1965, PINN 3658, Box 25, f. 4, Pinnacles National Park.

<sup>172</sup> Bruce M. Kilgore, "Origin and History of Wildland Fire Use in the U.S. National Park System," *The George Wright Forum* 24.3(2007): 102-103.

<sup>173</sup> Reg. Chief Scientist (O.L. Wallis) to Broyles, March 16, 1973, PINN 3658, Box 25, f. 13, Pinnacles National Park.

Not surprisingly, the participants at this seminar were all strongly in favor of introducing a long-term prescribed burn program at Pinnacles. Following up on the seminar, Chief Scientist Wallis assigned biologist James Agee to coordinate Pinnacles' incipient fire program from the regional office and recommended that a fire technician be hired at Pinnacles to provide local coordination. He then asked Dr. Biswell to draft the monument's first fire management plan.<sup>174</sup> Harold Biswell was at that time considered to be one of the nation's leading experts on the subject of prescribed burning. He had started his career fighting fires with the U.S. Forest Service back in 1930. After doing research in the pine forests of the Southeast during the early forties, however, Biswell had become acquainted with the ecological utility of fire management in certain environments and had gone on to study and teach this subject at the University of California in Berkeley, where he had worked in the Department of Forestry since 1947.<sup>175</sup>

Biswell's Fire Management Plan was completed by March the following year (1976). It proposed an initial program of research and experimentation to be followed by full-scale prescription burning on a periodic rotation beginning in 1979. The details of the operational phase of the program would be worked out during the initial research and experimentation phase. Research would result in a vegetation map and a detailed fire history. These would help resource managers to better understand the patterns and frequency of past fires and the response of native vegetation. Experimentation would result in practical knowledge of how fires act in the specific conditions associated with Pinnacles' various vegetation types and topography. Since no extensive prescription burning had been done in the chaparral before this time, little was actually known about how it would work or what to expect.<sup>176</sup>

At a professional conference later that year, Biswell and James Agee presented a paper which summarized Pinnacles' recently-completed Fire Management Plan and described the purposes of the program. The abstract (which was used by Superintendent Broyles for his own narrative report) is worth quoting in full:

Fire has always been an integral part of California's chaparral and the vegetation is well adapted to it. Occasional fire in chaparral reduced dead fuels and maintained a vegetation mosaic by encouraging sprouting of some shrubs and germination of others. At Pinnacles, where the primary vegetation type is chaparral, the historical management strategy was total fire suppression. The successful use of this policy has resulted in high volumes of dead fuel and a disappearing vegetation mosaic. Wildfire hazards are extremely high during summer months.

National Park Service fire policy changed in 1968 when prescribed and natural fires, now called management fires, were allowed in certain areas. The proposed chaparral fire management plan for Pinnacles begins with a research plan that has evolved from the park's Master Plan and Natural Resources Management Plan. A three year research program initiated in the 1976 FY will experiment with three kinds of burning techniques under varying conditions of weather, fuels and topography correlating fire behavior and effects to the indexes of the National Fire Danger Rating System.

The Pinnacles area will be divided into fire management units, most of which will remain unburned, during the research phase. In addition to testing and burning techniques, studies will include sampling existing vegetation and its conditions, fire history, direct impacts of fire on the site, successional patterns of vegetation after burning and the extent to which fire restores the appearance and character of the original chaparral cover that evolved with recurring fires.<sup>177</sup>

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<sup>174</sup> Reg. Chief Scientist (O.L. Wallis) to Broyles, Dec. 22, 1975, PINN 3658, Box 25, f. 1, Pinnacles National Park.

<sup>175</sup> Kilgore, "Origin and History" (2007), p. 98.

<sup>176</sup> The controlled burning of the Rangeland Improvement Association could not be used as a model for the prescribed burn program, because the objectives of the two efforts were so distinct. A different burn methodology would be needed in order to maintain the relatively small, cool fires desired by the latter.

<sup>177</sup> Harold Biswell and James Agee, "The Fire Management Plan for Pinnacles National Monument," in Robert M. Linn, ed., *Proceedings of the First Conference on Scientific Research in the National Parks, New Orleans, Louisiana, November 9-12, 1976* (Washington, DC: National Park Service, 1979), pp. 1231-1238.

As Biswell and Agee both noted, the Fire Management Plan was related to Pinnacles' revised Natural Resources Management Plan and its new Master Plan, both of which were also completed and approved in 1976. With the designation of nearly 13,000 acres of the monument as wilderness occurring that year as well, 1976 proved to be one of the most decisive in Pinnacles' recent history.

In 1976, a similar fire management program was initiated by the U.S. Forest Service. On September 30 of that year, the Forest Service's Fire Laboratory in Riverside, California implemented a five-year inter-agency research program to study prescribed fire in chaparral ecosystems as part of an integrated vegetation management plan.<sup>178</sup> Two workshops were held in Southern California to discuss this proposed Chaparral Management Plan in 1977. Monument superintendent Rod Broyles and regional Forest Ecologist Bruce Kilgore attended and were enthusiastic about the results of the discussions and the ideas being proposed. The Forest Service began experimental burning on a large demonstration plot in San Diego County later that year. Pilot projects were later conducted in Tehama, Mendocino, Shasta, and El Dorado counties as well. Three goals were identified: reduction of fuel loading, increased water yield and increased available browse for cattle and wildlife.<sup>179</sup>

By the end of 1976, Pinnacles was ready to begin implementing Biswell's Fire Management Plan. Forest Technician Dean Clark was hired in March—the same month the final plan was approved—to supervise the prescription burning program and to coordinate research.<sup>180</sup> Two permanent fire weather stations were established later that year, one on each side of the monument, and actual burning was initiated during the week of January 31, 1977, beginning with a 50 acre plot near Scout Peak. The plan called for three different types of burning to occur at different times of the year: upslope strip burning in winter and early spring, broadcast burning after grasses had dried in the spring, and broadcast burning after the start of fall rains. This would be carried on for a period of two years—through the end of 1978—with burning occurring approximately three days a week during each burn season. Research would be carried on simultaneously during the same period. Operational burning was expected to begin by 1979.<sup>181</sup>

This rigorous schedule was interrupted by drought conditions during the second year, which forced a temporary moratorium on all fires. As a result, funding had to be programmed for a third year to finish the experimental program.<sup>182</sup> By the end of 1979, the experimental phase had finally ended, and full-scale prescription burning began in 1980 but was maintained consistently for only three years (through the end of the 1982 season). A total of 5,483 acres were burned under this operational phase of the program. Over the subsequent decade, several small burns were conducted, resulting in a total of 40 acres between 1996 and 1999, but the initial large-scale program was never resumed.

The research side of the Pinnacle's fire management plan was carried on simultaneously after some initial delay in getting started. Tree ring data was gathered and analyzed, but this proved

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<sup>178</sup> U.S. Forest Service, "Vegetation Management Alternatives for Chaparral and Related Ecosystem Research and Development Program Charter," Jan. 29, 1976, PINN 3658, Box 25, f. 12, Pinnacles National Park; A USFS newsletter describing the Chaparral Management Plan explained that the "... goal of the program is to develop, test, and demonstrate vegetation management plans, techniques, and systems designed to maintain or enhance productivity of chaparral and related lands and, at the same time, ensure adequate protection of life, property, and resources. The overall goal is to achieve an uneven-aged mosaic of chaparral and associated ecosystems...The main objectives of the Program are: design a multiresource data base and classification system, an operational set of prescribed burning guidelines and planning methods for chaparral, techniques for and demonstrations of an integrated vegetation management plan, and a set of chaparral management guidelines along with a compendium of state-of-the-art background analysis and information...The Program is headed by Program Manager Jim Hickman and Assistant Program Manager Bill Dean and has a core Research Work Unit (RWU)...A major portion of the planned demonstrations and evaluations of the Program will be conducted on the Laguna-Morena Demonstration Area in San Diego County." The demonstration area comprised 127,000 acres under both public and private ownership ["CHAPS Newsletter" 1 (July, 1977), in PINN 3658, Box 25, f. 12, Pinnacles National Park.]

<sup>179</sup> California, *The California Department of Forestry, 1978-79-80 Review* (Sacramento, CA: California Department of Forestry, 1980).

<sup>180</sup> Dean Clark entered on duty on March 27, 1976.

<sup>181</sup> PINN 3658, Box 25, f. 25, Pinnacles National Park.

<sup>182</sup> Reg. Dir. to Broyles, July 13, 1978, PINN 3658, Box 25, f. 15, Pinnacles National Park.



insufficient to construct a comprehensive fire history.<sup>183</sup> Fire scars could be found dating back only to 1900, when a large conflagration had burned through the entire monument. This was used to determine the likely baseline for most of the vegetation currently growing in Pinnacles. In 1979, private consultants Jason Greenlee and Andrew Moldenke were contracted to research historical sources to supplement this field data. Their report was completed in 1982 and found that an average of one large fire of 2,500 acres or greater had occurred every nine years during the historic period, resulting in an estimated fire return interval of about 40 years (that is, the same portion of the landscape would burn, on average, once every 40 years). Greenlee and Moldenke also concluded that the majority of recent fires were human caused. Natural ignition sources—primarily lightning—were found to be scattered and infrequent throughout this part of the central coast range, suggesting that large natural fires usually burned into the monument from outside its boundaries.<sup>184</sup>

### **The Pinnacles Bottomlands During the Post-War Years (1946-2006)**

Ray Marcus kept the old Ben Bacon Ranch only until 1956, when he sold it to Arthur Corda. Only two years later, Corda sold the property to Earle Bradford.<sup>185</sup> None of these men were local or had any connection to the homesteading generation which had preceded them. The Park Service still wanted to acquire land at the southern end of this property, particularly on the Chalone Bench, and Bradford indicated his willingness to sell. But as before, the Park Service was not able to arrange the necessary funds to close the deal, and negotiations were dropped. Early the following year, Superintendent Everett Bright learned that Bradford was negotiating with an outside developer who proposed building a large tourist resort in the Bottomlands. Although nothing ultimately came of this proposal, the threat drove home the necessity of obtaining some degree of control over these lands—or at least of acquiring a buffer between the monument's eastern boundary and the developable land on the Bacon Ranch—in order to protect Pinnacles from future threats of adverse development. In 1960, the Bradfords announced that they were planning to construct a small resort themselves.<sup>186</sup> Their original idea included a restaurant, grocery store, gas station and swimming pool, with rental cabins possibly added later. These plans were soon scaled back, however, and the only development which the Bradfords ever completed was a short-order restaurant in a small shack they constructed beside Highway 146 on the Chalone Bench. Mrs. Bradford ran the place with the help of her young daughter, serving hamburgers, hot dogs and cold beer to visitors on their way to the monument.<sup>187</sup> The operation did not survive more than about a decade, and the small building was soon torn down.

During this time, McCabe Canyon remained a separate property from the rest of the Bottomlands and continued to be owned by descendants of the original Bacon family. Oliver Bacon's nephew George and his wife Pearl had acquired the small ranch in 1937. Their only daughter Shirlei later inherited it with her husband Robert [REDACTED]. During the early 1950s, Robert [REDACTED] and his brother Charley salvaged an old house from the naval airstation at Alameda and moved it to the foot of McCabe Canyon. This was the first modern structure to be erected in the canyon. The [REDACTED] lived in Hollister and only used the reconstructed building as a hunting lodge and holiday retreat. It was not occupied as a permanent residence until their son moved in after retiring in the 1990s. He never married and has no heirs. He sold the ranch to the National Park Service in 2000, and it is now part of Pinnacles National Park. He was given a life-lease on the property and continues to live there today.<sup>188</sup>

In 1968, Earle Bradford sold the entire Ben Bacon Ranch to a partnership of three businessmen—Frank LaHaye, Robert Katz and Albert Wollenberg—who had organized under the name of Pinnacles Land

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<sup>183</sup> The only trees available for sampling were grey pines (*Pinus sabiniana*), which are relatively short-lived and dispersed unevenly through the monument.

<sup>184</sup> Greenlee and Moldenke, *History of Wildfires* (1981); and U.S. Dept of the Interior, *Fire Management Plan, Pinnacles National Monument* (2007).

<sup>185</sup> Abstracts, FTIC.

<sup>186</sup> *San Jose Mercury-News*, April 17, 1960.

<sup>187</sup> Bessie Webb, typed transcript of interview by Reta Oberg, April 27, 1977, PINN 3658, Pinnacles National Monument.

<sup>188</sup> *Ibid.*; Abstracts, FTIC.

and Cattle Company to manage the property. Katz was a former chairman of the board of the Yosemite Park and Curry Company, the principal concessionaire for Yosemite National Park, and so already had ample experience working with the National Park Service operating visitor facilities. He apparently wanted to establish a similar business arrangement with the Park Service at Pinnacles. Katz and his partners approached the NPS regional office shortly after they acquired the Bacon Ranch and proposed cooperating with monument staff to build a new headquarters and visitor facilities—including a campground—on the company's land, either along Sandy Creek or on the Chalone Bench. Under the terms of this proposal, the Park Service would lease the land and the buildings from the Pinnacles Land and Cattle Company.<sup>189</sup>

Katz already knew that the Park Service intended to build a new headquarters near the eastern entrance of the monument and hoped to take advantage of this plan to negotiate a concession. The proposal for the new facility had been an important piece of the monument's Mission 66 Master Plan from 1965 but had never been realized, even though Earle Bradford had been willing to sell part of his property in 1958, because the Park Service had never been able to appropriate the money needed to buy the land. After Bradford's attempts to develop the property, Park Service planners recognized the need to have some control over these adjacent lands, or to acquire a buffer to protect the monument from adverse effects if major private development could not be prevented.<sup>190</sup> Katz's proposal seemed to offer an opportunity to do just that at minimal cost to the government, and the regional director quickly expressed his support for it.<sup>191</sup> But a regional planning team which was organized to prepare the government's official response rejected the offer, because it believed that further development of the monument itself should be concentrated on the west side rather than the east.<sup>192</sup> This misunderstanding within the regional office was a reflection of how quickly planning priorities were then evolving. The new emphasis on the west side may have represented a good long-term strategy, but the timing of this unexpected change in priorities was unfortunate—not to mention embarrassing—as it once again scuttled an excellent opportunity for the monument to obtain valuable land along its vulnerable eastern boundary. Katz and his partners in the Pinnacles Land and Cattle Company were taken aback by these unexpected events, but fortunately they did not pursue any action with other potential buyers.

Five years later, as preparations for a new Master Plan got underway in 1973, the Pinnacles Land and Cattle Company once again approached the NPS regional office and renewed its proposal for an east side concession or lease arrangement. The regional director informed the business partners that the new plan for Pinnacles proposed to convert the monument to day use only and therefore the Park Service was not interested in acquiring responsibility for managing a campground (or any similar concession that the partners might want to develop). However, the Service would support any effort by the Pinnacles Land and Cattle Company to develop and run such a facility on its own land adjacent to the monument. Furthermore, the Park Service would be very interested in acquiring land on Chalone Creek just outside the existing boundaries of the monument. The Pinnacles Land and Cattle Company agreed to both these

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<sup>189</sup> Robert Katz to Reg. Dir. William Bowen, May 23, 1969, PINN 3658, Box 16, f. 33, SAFR.

<sup>190</sup> Concern over neighboring development prompted the Park Service to become actively involved in county zoning legislation. As Superintendent Rod Broyles observed in response to a proposed rezoning of the area around Soledad and the monument's west boundary, "...we [Pinnacles National Monument] do not exist in a vacuum. The characteristics and values of the Monument can be radically changed by external influences such as the zoning of the Gabilan area. The National Park Service would prefer to have that portion of the Gabilan area, referred to commonly as the area under the sphere of influence of Soledad, in a zoning category that would not detract from the Park's scenic and esthetic values. Because the resource values of the Park are of national significance, we must be concerned with planning from the standpoint of Regional zoning and not only local influences." [Broyles to Monterey Co. Board of Supervisors, Dec. 4, 1978, PINN 3658, Box 17, f. 6, Pinnacles National Park.] An influential report by the National Parks Conservation Association the following year—the "NPCA Adjacent Lands Survey"—identified adverse development as one of the greatest threats facing parks nationwide. [Sellars, *Preserving Nature* (1997), p. 262.]

<sup>191</sup> Reg. Dir. to Dir., May 28, 1969, PINN 3658, Box 16, f. 33, Pinnacles National Park.

<sup>192</sup> "A Planning Directive for Pinnacles National Monument," November, 1969, PINN 3658, Box 16, f. 33, Pinnacles National Park.

proposals and soon applied for a special use permit from the county to open a 300-site campground on Sandy Creek just opposite the mouth of McCabe Canyon.

Plans for this ambitious proposal lagged at first, and actual construction did not begin until June of 1978. By then, the size of the campground had been substantially diminished. When it was finally completed at the end of that year, it actually comprised only a little more than one hundred sites with store, comfort stations and other facilities. The Park Service provided technical assistance for design and construction, and the comfort stations were done according to standard National Park Service plans typical of the Mission 66 era. Stu Kingman had joined the partnership a few years earlier and was living with his wife Peggy in a trailer home next to Ben Bacon's old house, supervising the construction. Stu would be the only member of the partnership to ever live on Pinnacles Ranch (which the company began calling its property at this time).

The second part of the 1973 agreement between the Pinnacles Land and Cattle Company and the National Park Service—the purchase of the company's land at the east entrance of the monument—also took several years to realize. This time, however, the delay was necessitated by legal constraints, for the Park Service could not buy the land until it had been authorized by Congress to expand the monument's boundaries. This authorization came with the Omnibus Wilderness Bill of October 20, 1976 (PL 94-567), which also designated 12,952 acres of wilderness area inside the monument.<sup>193</sup> By late 1977, the Pinnacles Land and Cattle Company agreed to sell 607 acres along Chalone Creek and the confluence of Sandy Creek (including the Chalone Bench) for just under half a million dollars. The Park Service still wanted this land as a buffer against potential adverse development on the eastern border of Pinnacles.

In 1992, the Pinnacles Land and Cattle Company became interested in selling its entire 2,000 acre property to the Park Service. The company enlisted the support of the Sierra Club and State Senator Henry Mello to obtain Congressional approval for the sale, but at that time the Park Service was not interested, as Pinnacles Superintendent James Sleznick believed the land was not appropriate for a unit of the National Park Service.<sup>194</sup> The most he was willing to consider was a small parcel of a few acres or so for an administrative center outside the monument's boundaries.<sup>195</sup> Regional Director Stanley Albright agreed with Sleznick, arguing that the ranch was too large for the Park Service to manage and recommended that a private party step in to preserve it instead.<sup>196</sup> Fortunately, the Pinnacles Land and Cattle Company did not look for other buyers at that time, and the matter was temporarily forgotten. When it was brought up again in 1998, however, the new superintendent, Gary Candelaria, had a very different opinion of the value of the Pinnacles Ranch property and soon renewed negotiations with the Pinnacles Land and Cattle Company.<sup>197</sup> (This included the upper half of McCabe Canyon, north of Oliver Bacon's property, as this had always remained public land). To legally authorize the acquisition, Candelaria requested Presidential approval to expand Pinnacles' boundary. The proposed authorization would include some 3,000 acres of private lands—approximately two-thirds of which was represented by Pinnacles Ranch—and more than 8,000 acres of adjacent BLM lands.<sup>198</sup> President Clinton signed the authorization in January, 2000, allowing Pinnacles to add as much as 11,000 acres to its existing area. The BLM lands were conveyed that same year, while negotiations proceeded for the purchase of the

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<sup>193</sup> In addition to authorizing the Park Service to purchase the east side parcel from the Pinnacles Land and Cattle Company, the bill also authorized the purchase of a 20 acre corner of [REDACTED] land at the foot of McCabe Canyon (on the east side), and on the west side, 160 acres belonging to J. Brosseau and 816 acres belonging to Larry Wilson. [Robert Katz to Sup. Broyles, November 9, 1976, PINN 3658, Box 17, f. 4, Pinnacles National Park.]

<sup>194</sup> June 12, 1992. Henry Mello, State Senator, to Reg. Dir. Stanley Albright, PINN 3658, Box 16, f. 31, Pinnacles National Park.]

<sup>195</sup> James Sleznick, interview by author, January 18, 2007. Sleznick had expressed an active interest in this idea since at least 1987. [Sleznick to Russ Butcher, October 1, 1987, PINN 3658, Box 22, f. 1, Pinnacles National Park.]

<sup>196</sup> Reg. Dir. Albright to Sen. Mello, July 1, 1992, PINN 3658, Box 22, f. 1, Pinnacles National Park.

<sup>197</sup> National Park Service, *Preproposal: Acquisition of the Pinnacles Ranch*, 1998, PINN 3658, Box 35, f. 16, Pinnacles National Park.

<sup>198</sup> Superintendent's Narrative Reports, 1998, PINN 3658, Box 15, f. 15, Pinnacles National Park.

remaining private lands.<sup>199</sup> Eventually, all but about 700 acres of these lands were purchased, and Pinnacles Ranch—the original Ben Bacon Ranch—was finally acquired on March 15, 2006.

During the time that Pinnacles Land and Cattle Company owned Pinnacles Ranch, Stuart (Stu) Kingman was the only one of the partners who actually resided on the property. Stu had joined the partnership toward the end of the seventies and became the company's on-site manager (although he still commuted to his principal job with Hewlett-Packard in Palo Alto). Stu eventually brought in a trailer house, which he installed just north of Ben Bacon's old house, and he and his wife Peggy lived here. By this time, the house which Ben had built in or about 1894 had been abandoned for some time and was deteriorating. Stu renovated the structure and began using it as a guest house. Over the following years, he supervised construction of the Pinnacles Campground along Sandy Creek between the Ben Bacon house and the Jonathon Jones homestead site. The campground included Oliver Bacon's small ranch, which was also abandoned by this time. Both Oliver's house and the Jones homestead site were demolished, and no trace remains of them today. Stu also built a runway and two shed-type hangars to accommodate his personal aircraft in the open field just east of George Butterfield's old house. (He used his aircraft for commuting to Palo Alto.) The Butterfield house had long since burned down.<sup>200</sup> Two of George Butterfield's barns still remained, and Stu Kingman renovated these for his own use. He also improved the well, installing an electric pump which brought water through a pipe to a steel tank he placed near the top of the small hill on which the Butterfield house had once stood. Water was fed by gravity from this tank to a concrete trough Stu constructed in the paddock next to the westernmost barn. Most or all of the paddock fencing around these barns dates from Stu Kingman's tenure, although the alignment of at least some of the fencelines may be historic.<sup>201</sup>

#### IV. Consequences and Effects of Land Use Practices

Each period of human culture discussed in the foregoing narrative had unique consequences for the physical environment it inhabited, the nature and extent of which depended on its land use practices and resource objectives. These are discussed in greater detail in the following five sections. As before, principle attention is given to the study area at the south end of Bear Valley in Pinnacles National Park (the Pinnacles Bottomlands), but it will often be necessary to speak in broader terms about the entire interior region of California's south coast ranges, or southern San Benito County (South County to locals). At the time Europeans arrived, this region was inhabited by numerous small communities (tribelets) of the Mutsun and Chalon cultures. (The study area itself lay within Chalon territory.) These cultures represented the most recent expression of a long and dynamic history (or prehistory) of indigenous California which goes back at least 5,200 years in the region where the study area is located and more than 10,000 years in other parts of California. However, only the latter part of the Late Period, when the cultural patterns uniquely associated with the Chalon would have emerged, are discussed here. This represents approximately the last five centuries. The beginning of permanent European settlement in the mid-eighteenth century brought a host of changes to the land, the most significant of which resulted from the destruction of indigenous cultural patterns and the depopulation of many areas where indigenous peoples had once resided. Among the depopulated areas was the interior hill country where the study area is located. This brought to an end centuries of traditional land management practices, such as burning, as well as environmental pressures resulting from hunting and the harvesting of plant resources. Eventually, European and Euro-American settlers would introduce their own land use practices and distinct environmental pressures, replacing the indigenous traditions and shaping the landscape in

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<sup>199</sup> On December 19, 2002, Public Law 107-370 designated as federal wilderness approximately 2,715 of these added public lands, bringing the total area of the Pinnacles Wilderness to just under 16,000 acres. About 5,500 acres of the added BLM lands had been listed as Wilderness Study Areas (WSAs) at the time of their conveyance to the NPS in 2000.

<sup>200</sup> According to Ernie Prewett, a local rancher and grandson of settlers Sam Prewett, this house burned down sometime between 1934 and 1937. [Ernie Prewett, interview by author, March 19, 2007.]

<sup>201</sup> *Pre-Acquisition Environmental Site Assessment Survey, Pinnacles Ranch*, Versar Inc., Fair Oaks, CA, 2005.

entirely new ways. These new practices could vary considerably depending on the government in power—Spain, Mexico, or the United States—and the economic objectives it encouraged. Sometimes land use practices varied under the same government, when individual groups held separate resource objectives. This is exemplified in the different approaches to chaparral management and controlled burning after World War II by ranchers on the one hand and the National Park Service at Pinnacles National Monument on the other. This example becomes even more interesting when indigenous patterns of burning—so far as we understand them—are also compared, as discussed in the final section of this conclusion.

### 1. Environmental Consequences of Late Period Indigenous Land Use Practices

It is not possible to imagine California's pre-European landscape without also considering the indigenous people who lived on it and used its resources for thousands of years. Myriad activities associated with resource utilization affected this landscape in diverse ways. Even activities of relatively minor intensity, such as digging plant bulbs and rhizomes from a field, may have had a significant cumulative effect when carried on in the same place over a long period of time. The question is not whether indigenous people of California had an impact but how and where they did so. The depth of time and remarkable dynamism which archeologists have shown in the prehistory of California demonstrate the impossibility of giving a single, static account of landscape impacts. Instead, individual periods and cultures need to be considered separately. The earliest documented human presence in the interior mountain ranges is associated with a Hunting Culture people dating from the Middle Period more than 5,000 years ago. Archeological evidence suggests that these people practiced a mobile foraging economy, which depended on hunting and seasonal gathering of plant resources. Although these activities could have had a significant impact on the environment, it is unlikely they were augmented by more intensive management practices, such as burning. Relatively little is known, however, about the Middle Period in this region. Considerably more information is available on the culture of the Chalon people, for which ethnographic as well as archeological evidence exists. This culture is believed to have emerged within the last five to six hundred years during the Late Period, so characterizations of land use practices and other economic activities based on observations made at the time of European contact can only be applied to this depth of time at most, and many of these activities likely evolved and changed even within this span of time. Further complicating our understanding of Chalon impacts on the landscape is the fact that much of what we know is inferred from generalizations made about the Ohlone as a whole and does not allow for potentially substantial differences which may have existed between regions, especially between the northern Ohlone groups of the San Francisco Bay Area and those of the South Coast Ranges.<sup>202</sup> Even where the Chalon shared cultural patterns and practices with other Ohlone groups, the intensity of their impact on the land may have been less, given lower population densities and the comparatively recent appearance in the archeological record of complex cultural patterns associated with a collector—or incipient collector—economy. This latter evidence suggests that the Chalon may not have occupied their territory as long as the northern Ohlone groups.

All of the Ohlone peoples, including the Chalon, manipulated their landscape to manage the various resources they depended upon. Often this meant improving habitat conditions which favored a particular plant or animal (or assemblage of plants and animals).<sup>203</sup> Some plants were actually cultivated to increase their yield or improve their quality and usefulness. For example, tubers were purposely disturbed as they were being harvested so that the cormlets—reproductive nodules growing from the side of the principle bulb—would be left behind to produce new plants for the following year. Over many

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<sup>202</sup> For example, by Bocek in "Ethnobotany of Costanoan Indians" (1984), and by many other contemporary studies. But as Milliken points out, the differences between individual Ohlone tribelets—and especially between northern and southern groups of tribelets—in prehistoric times could be substantial. [Milliken, *Ohlone/Costanoan* (2009), pp. 70-85.].

<sup>203</sup> Some scholars argue that the management practices of California Indians at the time of European contact aimed at increasing the number and diversity of useful resources rather than favoring one resource at the exclusion of others, as in modern agricultural monocultures. [E.g., Lightfoot, *California Indians* (2009), pp. 131-132.]

years, this practice would gradually increase the population and distribution of this valuable food source. In another example, the soil of sedge beds was manually aerated and cleaned of stones in order to stimulate the underground rhizomes to grow as long and straight as possible, increasing the usefulness and value of the fibers harvested from the plants.<sup>204</sup> All of these activities had impacts on the landscape and may have affected its ecology to one extent or another, but the management activity having the greatest and most widespread effect was the intentional use of fire.

The fact that California Indians purposely ignited fires has never really been questioned. The evidence of burning was seen by the earliest Spanish explorers, and later the missionaries and military authorities observed the Indians engaged in this activity.<sup>205</sup> In 1776, the Spanish governor of California, Fernando Rivera y Moncada, complained that he was not able to feed his livestock while traveling through the country in late spring "...due to the horses and mules not having grass, all occasioned by the great fires of the gentiles [that is, the non-Christian Indians], who, not having to care for more than their own bellies, burn the fields as soon as they gather up the seeds." As Moncada rightly observed, the Indians did not use livestock and so did not have to maintain pasturage, but the Spanish thought this was irresponsible of them. It eventually proved so annoying that in 1793 another governor, José Joaquín de Arrillaga, issued a formal proclamation banning this "very harmful practice of setting fire to pasture lands." Missionaries and presidio commanders were enjoined to punish any Indian found putting flame to field.<sup>206</sup>

Early in the twentieth century, scholars began to acknowledge the important role which anthropogenic fire has played in defining the California landscape. In 1922, William S. Cooper published a seminal study on California's chaparral vegetation, one of the first of its kind.<sup>207</sup> In this book, Cooper argued that fire is the principal agent responsible for arresting the dominance of chaparral in many places where he otherwise expected it to occur. Frequent burning, he believed, had allowed grassland to make patchy intrusions into, and in some cases completely replace, the chaparral. He noticed that grassland dominated in the valley bottomlands and adjacent hillsides, extending up tributary canyons and into surrounding hills. Here it began to intergrade with the chaparral, which then became increasingly dominant while grassland became increasingly rare, until at the furthest distance from the broader valleys, little or no grassland was present at all, and chaparral was nearly continuous. Cooper noticed no correlation with natural ecological constraints—like soil type, hill aspect, moisture, etc.—and could find no other reason for this transition from grassland to chaparral except distance from the valley bottomlands. He eventually attributed the pattern to intentional burning by the Indians, who maintained grassland dominance in and around valley bottomlands where their populations and cultural activities were concentrated. Cooper knew that the Indians had burned and was able to describe the long term effects of this activity, but conceded that "the reasons for the burning I have not been able to discover."<sup>208</sup>

Other scholars followed Cooper's lead in connecting California's vegetational patterns with Indian burning—for example, Arthur W. Sampson in his study of the agricultural value of burning

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<sup>204</sup> Michelle L. Stevens, "White Root (*Carex barbarae*)," *Fremontia* 32.4 (2004): 3-6; and M. Kat Anderson, *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources* (Berkeley: University of California Press, 2005), pp. 195-198.

<sup>205</sup> For instance, Juan Crespi described evidence of Chalon burning between King City and Greenfield in 1769. [Alan Brown, *Distant Roads* (2001), pp. 530-533.]

<sup>206</sup> Jan Timbrook, John R. Johnson, and David D. Earle, "Vegetation Burning by the Chumash," *Journal of California and Great Basin Anthropology* 4.2 (1982): 163-186.

<sup>207</sup> William S. Cooper, *The Broad-Sclerophyll Vegetation of California: An Ecological Study of the Chaparral and Its Related Communities* (Washington, DC: Carnegie Institution, 1922).

<sup>208</sup> Cooper, *Broad-Sclerophyll Vegetation* (1922), p. 80. His source on Indian burning is Jepson, who in turn relied on first-hand evidence "gathered by myself from members of the Nyah, Hupa, Pomo and other tribes; also from verbal relations of early Californians." [Willis Linn Jepson, *The Silva of California* (Berkeley: University of California Press, 1910).]

chaparral, a common practice among ranchers in many rural districts of California.<sup>209</sup> Sampson concluded, based largely on historical evidence, that Indian burning was confined to the woodlands and prairies they occupied and did not include the chaparral brushlands, though a few accounts testified to occasional burns occurring here for the purposes of flushing out game.<sup>210</sup> Although Sampson's objectives were quite different from those of Cooper, his assessment of the Indian use of fire supported Cooper's conclusions that Indian burning reinforced these vegetational patterns, with grass and oak woodland predominating in the valley bottoms and adjacent foothills but giving way to chaparral on steeper, more remote hillslopes. The Assistant Deputy State Forester for the California Division of Forestry, Lee Burcham, reiterated these same conclusions in his influential 1957 study on the evolution of California's livestock industry.<sup>211</sup>

All of these studies seemed to agree that burning had been a component of pre-contact Indian culture and proposed various interpretations of the effects of this practice, but as yet little attention was given to analyzing *why* the Indians had burned. Enough information was available by that time to answer this question, but doing so required bridging inter-disciplinary boundaries and applying what was known about the ecological effects of fire to the ethnographic and historical evidence documenting the actual practice. This was finally done in 1973 by anthropologist Henry T. Lewis in his widely-read paper "Patterns of Indian Burning in California."<sup>212</sup> Unique to Lewis' approach was the assumption that Indians had burned *for a purpose* and had known quite well what it was they were trying to achieve. Having marshaled all the usual evidence for the existence of burning in pre-European California, Lewis went on to note additional evidence from the ethnographic and historical record which provided details that could be interpreted from an ecological perspective—for example, the seasonal timing of burns, the plant communities in which burns occurred, and descriptions of the condition of vegetation in places where burning was commonly practiced.

Among the patterns which began to emerge as a result of this analysis, a connection between burning and the enhancement of vegetation types which were economically valuable to the Indians seemed evident. Valley bottomlands were burned to maintain grassland, to prevent the intrusion of chaparral scrub and to improve the acorn harvest in oak woodlands. Grassland was usually burned in late spring after the grass seeds were harvested in order to remove unnecessary chaff and to ensure a good harvest the following year (much to the consternation of Europeans, who relied on the chaff, or hay, to feed their livestock). Fire also created conditions which favored the proliferation of geophytes.<sup>213</sup> Some areas were burned to improve the quality of fiber sources for basketry. Burning also helped hunters—indirectly, by opening up the chaparral and stimulating new growth to improve forage; and directly, by flushing out game animals, which were hunted down as they emerged from hiding. Other scholars have since followed Lewis' lead, and a growing body of information has emerged on Indian land management through the use of fire. Notable in this field has been the work of M. Kat Anderson, who has

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<sup>209</sup> Arthur W. Sampson, *Plant Succession on Burned Chaparral Lands in Northern California*, Bulletin No. 685 (Berkeley: University of California, Agricultural Experiment Station, 1944).

<sup>210</sup> Sampson's principle source is the documentary evidence compiled by L.A. Barrett in *A Record of Forest and Field Fires in California, from the Days of the Early Explorers to the Creation of the Forest Reserves* (San Francisco: U.S. Forest Service, 1935). He also relies upon the anthropological interpretations presented in S.A. Barrett and E.W. Gifford, "Miwok Material Culture," Public Museum of the City of Milwaukee, Bulletin No. 2 (1933): 117-376; and Alfred Kroeber, *Handbook of the Indians of California* (Washington, DC: Smithsonian Institution, 1925).

<sup>211</sup> L.T. Burcham, *California Range Land: An Historico-Ecological Study of the Range Resource of California* (Sacramento, CA: Department of Natural Resources, Division of Forestry, 1957).

<sup>212</sup> Henry T. Lewis, "Patterns of Indian Burning in California: Ecology and Ethnohistory," in *Before the Wilderness: Environmental Management by Native Californians*, eds. Thomas C. Blackburn and Kat Anderson (Menlo Park, CA: Ballena Press, 1993). Geographer Homer Aschmann anticipated many of Lewis' conclusions some fifteen years earlier but in a more narrowly-focused study of Southern California vegetation. [Aschmann, "The Evolution of a Wild Landscape and Its Persistence in Southern California," *Annals of the Association of American Geographers* 48.3 (1959): 250-51.]

<sup>213</sup> Claudia M. Tyler and Mark I. Borchert, "Chaparral Geophytes: Fire and Flowers," *Frémontia* 35.4 (2007): 22-24.

supplemented the historical record with oral accounts and demonstrations by surviving elders who preserve the traditional ecological knowledge of their people. But an unbroken continuity of traditional knowledge from before the arrival of Europeans can be found only in a handful of historically-remote parts of the state. These cultural refugia, unfortunately, do not include the Ohlone homeland, where some of the earliest and most consequential impacts of European settlement were experienced.<sup>214</sup>

Based on recent scholarship, it now appears evident that most Indians of the California coastal regions practiced intentional burning in late prehistoric and protohistoric times (and possibly earlier).<sup>215</sup> These practitioners included the Ohlone around San Francisco and Monterey Bays. Direct evidence that the Chalon also participated in these management activities is mostly lacking on account of the remoteness of their home territory relative to early European settlements. However, an intriguing observation occurs in one of earliest Spanish accounts of the South Coast Range from the Portolá expedition of 1769. Juan Crespí, a Franciscan priest who accompanied this party, described traveling in late September along the Salinas River, where he found evidence of burning everywhere. When the party camped in the vicinity of Greenfield at the mouth of Chalone Creek, Crespí observed that “everything has been burnt off by the heathens, so that because of this hardly enough grass can be found for our mounts.”<sup>216</sup> This was on the presumed border between Chalon and Esselen territory and may have reflected the activities of either people. Crespí mentioned at least one seasonal village near King City, counting more than 200 occupants there. (The party did not see any Indians at the mouth of Chalone Creek, but Crespí wrote that “a great many large beaten paths made by the heathers are met with, but we have not come across any village...”)<sup>217</sup> Even if Crespí’s observations describe Esselen, rather than Chalon, activities, they nonetheless demonstrate that the Chalon were familiar with the practice of burning, given that they lived nearby. But more definitive evidence that the Chalon themselves engaged in this practice may have to await further archeological investigation within Chalon territory.

If the Chalon made intentional use of fire for landscape management, as seems likely, then they may have adopted this practice (or brought it to full development) only during the last five centuries of the Late Period. This would be consistent with a broad spectrum resource base associated with the incipient collector economy that archeological evidence suggests emerged at that time. Larger, more sedentary populations relied on a greater diversity of resources which could be enhanced through burning. As one scholar observes, fire made it possible “to increase the extent of disturbed habitat and promote the spread of small-seeded, disturbance-following plant resources within restricted territories.”<sup>218</sup> Archeological research in other parts of west central California suggest that the conditions requiring an intensification of resource management, such as the introduction of fire, only emerged during the Late Period when earlier plant staples like the acorn began to be supplemented with an increasing number and variety of small seeds. This landscape enhancement has been interpreted by some scholars as representing a preliminary stage in the advancement to a fully-agricultural economy. But others have pointed out that agriculturalists typically focus their energies on only a small number of plants—or even a single species—to the exclusion of others. In their opinion, the promotion of greater diversity through landscape management represents an alternative strategy which cannot be measured against a norm of European agricultural traditions but must be understood according to its own merits.<sup>219</sup> Even if intentional burning on the California landscape predates the emergence of Late Period economic conditions, it seems reasonable to assume that these conditions may have produced a significant

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<sup>214</sup> Anderson, *Tending the Wild* (2005).

<sup>215</sup> Lightfoot, *California Indians* (2009), pp. 94-122.

<sup>216</sup> “Está todo quemado de los gentiles, que apenas se encuentra sacate para la cavallada, por lo dicho.” Entry for 27 September, 1769 in Brown, *Distant Roads* (2001), pp. 530-31.

<sup>217</sup> “Se encuentran muchos caminos grandes trillados de los gentiles, pero no hemos encontrado ranchería alguna ni a gentiles...” [Brown, *Distant Roads* (2001), pp. 530-31.]

<sup>218</sup> Wohlgemuth, “Resource Intensification” (1996), p. 98.

<sup>219</sup> Lightfoot *California Indians* (2009), pp. 124-140; and Lowell J. Bean and Harry W. Lawton, “Some Explanations for the Rise of Cultural Complexity in Native California with Comments on Proto-Agriculture and Agriculture,” in Thomas Blackburn and Kat Anderson, eds., *Before the Wilderness: Environmental Management by Native Californians* (Menlo Park, CA: Ballena Press, 1993). This essay was originally published in 1973.



intensification of the practice. Although this remains to be tested, it would suggest that many of the landscapes which Europeans encountered when they first arrived may have evolved over a relatively short period of time—centuries rather than millennia—like the Late Period cultures which inhabited them.

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Burning annual vegetation after the seed had fallen or been harvested encouraged subsequent new growth during the rainy season by reducing accumulated ground litter. The efficacy of this practice was noticed by many early observers, including Crespi, who later described new growth emerging within these burned areas immediately following the first soaking rain.<sup>220</sup> Fires of this nature would also have discouraged woody species, preventing them from invading bottomlands and competing with the grasses and forbs which were preferred by the Indians as sources of food and fiber. Where perennial grasses occurred, they would not have been damaged by these low-intensity burns. Some species, like needlegrass (*Nasella* spp.), have even been observed to spread as a result of fire.<sup>221</sup> Others, like deergrass (*Muhlenbergia rigens*), are encouraged to grow fuller and more luxuriant after dead chaff is burned away, allowing new growth to emerge. Deergrass tussocks which are burned in this way have been observed to produce many more seed culms than plants which are not burned. For this reason, fire is still used as a management technique by contemporary California Indians who harvest the culms for basketweaving.<sup>222</sup>

Indian burning also affected other habitats in the pre-European environment, most notably oak woodlands and savannah, where most of the inland valley populations were probably concentrated because of the abundance of food and water here. Much of Bear Valley and the lower slopes of the surrounding hills are characterized by this habitat type. Species associated with these areas include valley oak (*Quercus lobata*) and coast live oak (*Q. agrifolia*), especially in the deeper soils of the valley bottomlands and tributary canyons; while blue oak (*Q. douglasii*) is common on many north-facing hillsides and along the lower foothill margin where chaparral is not dominant. Grey pine (*Pinus sabiniana*) often intergrades with the oak woodland but may occur within chaparral as well. Oaks were almost certainly more prolific before the arrival of Europeans, especially on the valley bottomlands, in part because land management practices attributable to the Indians would have encouraged seedling regeneration and the health of mature trees, but also because practices associated with later homesteaders and ranchers during the historic period had the opposite effect, actively reducing the number of standing trees and suppressing regeneration of new ones.<sup>223</sup>

One of the most important questions about Indian land management practices during the aboriginal period is the *frequency* of their burns (the “fire-return interval”). One study of blue oak woodlands in the Sierra Nevada foothills determined that the pre-contact fire-return interval averaged

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<sup>220</sup> On October 15, 1770, while in the vicinity of Monterey, Crespi wrote: “...we had two days of rain, a harder rainfall than in June, that managed to penetrate the soil a bit, as all the seeds of the grasses have sprouted.” (“...nos llovió dos días, agua más recia que la de junio, y no dejó de calar algo la tierra, porque han nacido todas las semillas de los sacates.” [Brown, *Distant Roads* (2001), pp. 740-741.]

<sup>221</sup> Jason G. Hamilton, “Changing Perceptions of Pre-European Grasslands in California,” *Madroño* 44.4 (1997): 324. Hamilton cites field studies made by scientists from the University of California’s Agricultural Experiment Station as well as the doctoral dissertation by E.O. Ahmed, “Fire Ecology of *Stipa pulchra* in California Annual Grassland,” University of California at Davis, 1983. *Stipa pulchra* is an older classification for *Nasella pulchra*.

<sup>222</sup> Earl Lathrop and Bradford Martin, “Fire Ecology of Deergrass (*Muhlenbergia rigens*) in Cuyamaca Rancho State Park, California,” *Crossosoma* 8.5 (1982): 1-10; and M. Kat Anderson, “The Ethnobotany of Deergrass, *Muhlenbergia rigens* (Poaceae): Its Uses and Fire Management by California Indian Tribes,” *Economic Botany* 50.4 (1996): 409-22.

<sup>223</sup> Rossi, Randall S. “History of Cultural Influences on the Distribution and Reproduction of Oaks in California,” in *Proceedings of the Symposium on the Ecology, Management, and Utilization of California Oaks (General Technical Report PSW-044)*, ed. Timothy R. Plumb (Albany, CA: U.S. Dept. of Agriculture, Pacific Southwest Research Station, 1980).

about 25 years (shortening to only seven years during the early American period after 1848).<sup>224</sup> This would have been long enough to allow oak seedlings to grow sufficiently large to survive and resprout after the next conflagration, while a shorter fire-return interval would have resulted in greater mortality.<sup>225</sup> If the pre-contact fire regime was culturally managed, this timing suggests that the Indians may have consciously planned their burns to encourage regeneration of an economically valuable resource (or at least, to avoid suppressing it). Although Bear Valley would have required a slightly different fire regime to achieve the same results, it is possible that the Chalon pursued similar objectives here, since they too would have wanted to encourage conditions that were conducive to the production of seed-bearing plants.

In sum, although the precise composition of pre-European vegetation in the valley bottomlands cannot be known, it seems relatively certain that indigenous activities kept the landscape more open and free of woody underbrush, favored perennial grasses where they existed, and encouraged vigorous but widely-spaced stands of productive oak woodland with regular regeneration. These characteristics would have extended into the surrounding hills, pushing back the edge of the chaparral some distance above the valley and canyon floors, though probably not far. On the other hand, the rugged back country, which the Indians utilized only on a passing basis, would have remained relatively unaffected except for an occasional fire to flush out wild game. This practice is described by a few early commentators but probably represented no more than a sporadic activity that was not repeated systematically and so could not have resulted in a type-conversion of the brush environment. Riparian corridors extending up side canyons and minor tributaries might also have been affected by indigenous land management activities, with important fiber sources like willow regularly manipulated through burning and other treatments to produce desirable harvests.

One factor illuminating the differential intensity of landscape manipulation is the use—or pattern—which Indians would have made of each environment. The chaparral backcountry was utilized primarily for hunting of animals and yielded few vegetative resources except firewood, the importance of which might actually have encouraged the preservation of this community.<sup>226</sup> By contrast, the valley bottomlands and canyon tributaries close to Indian village sites were utilized for their seed and fiber crops. These resources could be enhanced through landscape manipulation and consequently were more intensively managed.<sup>227</sup>

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<sup>224</sup> Barbara Allen-Diaz, Richard Standiford, and Randall D. Jackson, "Oak Woodland and Forests," in Michael G. Barbour, Todd Keeler-Wolf, and Allan A. Schoenherr, eds., *Terrestrial Vegetation of California*, 3rd. Ed. (Berkeley: University of California Press, 2007), p. 330.

<sup>225</sup> Tedmund J. Swiecki and Elizabeth A. Bernhardt, "Effects of Fire on Naturally Occurring Blue Oak (*Quercus douglasii*) Saplings," in Richard B. Sandiford, Douglas McCreary, and Kathryn L. Purcell, eds., *Proceedings of the Fifth Symposium on Oak Woodlands: Oaks in California's Changing Landscape*, PSW-GTR-184, (Albany, CA: U.S. Dept. of Agriculture, Pacific Southwest Research Station, 2002). They found that a DBH of approximately two inches was the minimum threshold for blue oak saplings to be capable of crown-sprouting after a severe top-killing fire.

<sup>226</sup> Chester King, "Fuel Use and Resource Management: Implications for the Study of Land Management in Prehistoric California and Recommendations for a Research Program," in Thomas C. Blackburn and Kat Anderson, eds., *Before the Wilderness: Environmental Management by Native Californians* (Menlo Park, CA: Ballena Press, 1993).

<sup>227</sup> These distinctions may also have corresponded to male and female zones of activity, since women tended to forage relatively close to centers of occupation and would burn on a repeated and systematic basis in order to improve their harvest; while men tended to range much further from these centers and in a more unpredictable pattern. When they burned, it was not done in a systematic way and was rarely repeated in the same location. As a result, male burning had little lasting effect on the landscape, while female burning, probably resulted in more significant and lasting changes in vegetational composition. [Nelson Siefkin, NPS Fire Archeologist, conv. with author, November 13, 2008]. Studies of the differential impact of male versus female burning strategies have been done for other traditional foraging cultures. See, for example, R. Bird, Bliege, D.W. Bird, B.F. Codding, C.H. Parker, and J.H. Jones. "The Fire Stick Farming Hypothesis: Australian Aboriginal Foraging Strategies, Biodiversity, and Anthropogenic Fire Mosaics." *PNAS* 105.39 (2008): 14796-801.

It appears that all of the California Indians manipulated their environments to some degree or another according to their ability. All would have shared the common objective of promoting abundance and productivity of seed-bearing plants, from woodland oaks to perennial grasses to annual forbs. In marked contrast to these indigenous strategies were the land management practices of Hispanic Europeans, who promoted leaf over seed in order to sustain the livestock on which their pastoral economy was based.

## 2. Environmental Consequences of European Colonization under Spain

The impact of European colonization began even before the first permanent settlements in Alta California. Several species of exotic plants—most notably filaree (*Erodium cicutarium*)—had been introduced by the early eighteenth century. Their effect was probably slight at first, though eventually they would contribute to more profound environmental changes. Of greater consequence was the possible introduction of exotic diseases, which may have afflicted Native populations as early as the sixteenth century. The significance of these introductions—or even whether they occurred—remains open to debate, but several scholars point to evidence suggesting that epidemic diseases substantially depressed Native populations during the latter half of the Late Period. Apart from the obvious turmoil these presumed epidemics would have caused within Native societies themselves, they also may have had much broader environmental effects as human predation pressure diminished and populations of many prey species—especially cervids such as deer and elk—rebounded.<sup>228</sup>

A more direct and widespread impact on the Alta California landscape followed the introduction of European livestock during the latter half of the eighteenth century. The Spanish longhorn cow (*ganado prieto*), a variety of Spanish sheep (the *churro*), and the horse all began to arrive with Spanish settlers after 1769.<sup>229</sup> The number of livestock present in California during this initial period of Spanish missionary activity is disputed, but the most reliable estimates suggest that the missions possessed as many as 400,000 cattle and 300,000 sheep at the height of their prosperity in the first few decades of the nineteenth century. The horse represented a unique and possibly greater impact. With California's abundant native grasslands to support it, the sturdy and independent Spanish breed quickly naturalized and spread throughout the interior. These wild herds became so prolific that in 1812 Spanish authorities slaughtered as many as 30,000 to reduce competition for valuable pasturage.<sup>230</sup> This suggests that the number of horses ranging wild in Alta California by that time must have been comparable—at least—to mission livestock populations.<sup>231</sup> Missionary livestock were pastured on an area of land approaching ten million acres, or about 25 acres for each cow and 33 acres for each sheep, but not all of this land was readily accessible for grazing, and stock were unevenly distributed. As a result, localized overstocking of the early rangelands probably occurred, and some areas may have been degraded while others experienced little impact at all.<sup>232</sup>

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<sup>228</sup> Preston, "Serpent in the Garden" (1997); and Preston, "Post-Columbian Wildlife Irruptions (2002).

<sup>229</sup> Approximately 200 cattle were brought north with the Portolá expedition in 1769. [Burcham, *California Range Land* (1957), 118ff.] However, the first significant importation of livestock came with De Anza's second expedition in 1776. More than a thousand animals, including about 355 cattle and 500 horses, were brought into Alta California that year. [Milliken, *Time of Little Choice* (1995), p. 98.]

<sup>230</sup> George Harwood Phillips, *Indians and Intruders in Central California, 1769-1849* (Norman: University of Oklahoma Press, 1993), p. 47. Burcham also describes these horse slaughters but believed they began in the early 1820s. [Burcham, *California Range Land* (1957), pp. 127 and 187.] They may, in fact, have been an ongoing practice.

<sup>231</sup> Burcham, "Cattle and Range Forage" (1961), p. 144.

<sup>232</sup> Mission San Juan Bautista had as many as 11,000 cattle and 13,000 sheep and also kept between 600 and 800 horses. These animals were pastured on three ranchos lying both north and south of the mission proper (the San Justo, San Felipe and the Todos Santos). [Engelhardt, *Mission San Juan Bautista* (1931).] The stock were allowed to roam more-or-less freely, as there were no fences. The same was true at Mission Soledad, where approximately 5000 cattle, 9000 sheep and between 500 and 1000 horses were kept on three ranchos (the San Lorenzo, San Vicente and San Fernando). [Engelhardt, *Mission Nuestra Señora de la Soledad* (1929).]

The impact of mission-era pastoralism can be judged in part by the effect it had on Indian food resources.<sup>233</sup> Anthropologist Randy Milliken observed that Indian livestock thievery began in response to the loss of traditional food sources, which in turn was the result of overgrazing by Spanish livestock. This relationship was recognized even by Spanish authorities and occasionally commented upon. In 1796, for example, Governor Borica observed that overgrazing had damaged native vegetation, and in response the Indians were robbing cattle for sustenance.<sup>234</sup> In fact, this decade was a turning point for the Ohlone tribelets of the central coast, as greater numbers began suddenly entering the missions. The majority of these neophytes were now adults rather than children as previously. Milliken argues that this change was a result of the collapse of native societies, which in turn was due to the failure of native food sources. This was exacerbated by a three-year drought which began in 1793, but the deeper cause, as Governor Borica had recognized, was a more fundamental change in the natural environment brought about by new Spanish land use practices such as stock grazing. With the establishment of Mission San Juan Bautista in 1797, these changes were pushed southward from the San Francisco Bay and Santa Clara Valley, and inland from Monterey and the Salinas Valley where the Rumsen Ohlone first came under Spanish influence. Spanish pastoral land use practices now extended as far as the Mutsun tribelets in the San Juan Valley and up the San Benito River valley as far as the Chalon (many of whom may already have encountered the Spanish on the west side of the Gabilans through Mission Soledad). Given the vast numbers of sheep, cattle and horses on Spanish California's unfenced range, it is not only possible but likely that some of these animals were wandering into the vicinity of the study area by this time.

Overall, the significance of the missions in purely environmental terms can only be guessed, but if Milliken is correct in supposing that degradation of native food resources was an important factor compelling Indians to submit to baptism, then their impact was likely profound. Nearly all of the various Ohlone peoples had entered the missions by 1810, only thirteen years after the founding of San Juan Bautista, the last mission to be established in their territory.<sup>235</sup> The extent of this impact on native societies far exceeded the missionaries own modest numbers. By conservative estimates, the Native population for the entire state fell by half during this period, although the missions themselves controlled only about a sixth of the state's total area. The destruction of Native cultures was even more complete, with nearly all of the indigenous peoples of the coast and central coast ranges barred from practicing their ancestral traditions or returning to their homes once they had become baptized Christians. This forcible acculturation of California Indians to Spanish life resulted in the abandonment of most Native land use practices—and of many Native lands—by the end of the mission period and may have been the most significant and lasting impact which Spanish colonization had. In the absence of traditional such as burning and tilling, many landscapes which had been managed for centuries, if not thousands of years, were now reverting to wilderness. Others, which lay nearer to Spanish settlements, were being directly transformed by European modes of agriculture and livestock grazing.

### 3. Environmental Consequences of Mexican Pastoralism (1834-1864)

The period of Mexican pastoralism which replaced the Franciscan missions after 1834 represented a continuation, and in some respects an intensification, of previous trends. Although Indians were no longer forcibly confined to missionary institutions, those who had survived this ordeal remained a marginal caste in a predominately European society. Many found work as common laborers or as *vaqueros* on the large Mexican cattle ranches. Some may have escaped to the interior beyond the immediate influence of Hispanic California, though for most this would have meant abandoning families and ancestral homelands and could not have been a very attractive alternative. How many might have chosen this option is impossible to say but the number was probably small. These individuals or small groups may have re-introduced traditional land use practices to interior locations like the study area, which were remote from Hispanic population centers, but if this occurred it is unlikely to have been widespread or intensive enough to have made any significant impact on the landscape.

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<sup>233</sup> Milliken, *Time of Little Choice* (1995), pp. 73, 98, and 148.

<sup>234</sup> *Ibid.*, p. 148.

<sup>235</sup> However, this was only one among many factors, and not necessarily the most crucial. [Milliken, *Time of Little Choice* (1995), pp. 221ff.]

The extraordinary growth of the Mexican cattle ranches, both in size and number of livestock, was probably the greatest impact associated with this period, though its actual significance to the environment remains open to debate. Much depends on how the native (pre-European) vegetational communities are interpreted. Descriptions of the coastal and interior valley landscapes from early in the American period suggest that grassland communities throughout this region were already dominated by annual grasses and forbs. Some of the most commonly-observed species were exotic oat grass (*Avena fatua*) and filaree (*Erodium cicutarium*), both of which were introduced from southern Europe and the Mediterranean.<sup>236</sup> If these native grasslands were originally dominated by perennial grasses, as some scientists have suggested, then a type conversion of the vegetational community must have occurred during the relatively brief period of Hispanic occupation (that is, within no more than about 80 years). Livestock grazing was the only widespread practice introduced by Hispanic colonists which might have been responsible for a transformation of this magnitude and extent (though suppression of indigenous land use practices such as burning might also have contributed).<sup>237</sup> If, on the other hand, these native communities were always dominated by annual grasses and forbs, then the landscape described by early American observers may not have represented such a radical change.<sup>238</sup> A number of scientists have recently adopted a more nuanced view of the pre-European California landscape, believing that species composition in native grasslands may have varied considerably depending on local conditions, with perennial grasses dominating only in relatively moist, coastal environments, while annual grasses and forbs were far more common in drier inland locations.<sup>239</sup> The introduction of exotics like oat grass and filaree in these interior grasslands may have changed the overall species composition but not the community type and therefore represented a far less profound transformation than previously assumed.

#### 4. Environmental Consequences of American Agriculturalists (1865-1941)

The homesteading period introduced the most intensive, if not necessarily the most widespread, impact on the natural environment. Agriculture directly and mechanically replaced native species with introduced, usually annual, exotics like wheat and barley. During the early decades of the homesteading period, other exotic species were also tried but with limited success. These included rye, corn (*Zea mays*) and even castor bean (*Ricinus communis*) in one instance.<sup>240</sup> Most homesteaders during the first generation of settlement were limited to a few hundred acres. The legal limitation on a single-family claim, based on the Homesteading Act of 1864, was 160 acres. Although there were many ways to

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<sup>236</sup> For example, Titus Fey Cronise described oat grass as a native species and even believed that it was fast disappearing in many places as a result of overgrazing by livestock. [Cronise, *The Natural Wealth of California* (San Francisco: H.H. Bancroft & Co., 1868), p. 521.] A suggestive first-hand observation comes from San Juan Bautista settler John Breen, who wrote in his diary on 18 March 1854, "The hills are green from top to bottom and the vallies are as fair as cultivated fields, there is nothing lacking to make this country lovely but honest people." By midsummer, Breen observed that the grasses had withered with the seasonal drought and the fire season had begun: "Grass on hills completely dry and has commenced burning. It has been burning since the last week on the hills north of this place, and the country begins to wear a dry appearance." [8 June 1854]. These observations suggest that annual grasses (probably oat grass) were already dominant. A similar pattern would not have presented itself if the hills were covered with perennial bunchgrasses. [Breen, "Diary," California Historical Society.]

<sup>237</sup> Burcham, *California Range Land* (1957).

<sup>238</sup> Minnich, *California's Fading Wildflowers* (2008).

<sup>239</sup> E.g., Paula M. Schiffmann, "Species Composition at the Time of First European Settlement," in Mark R. Stromberg, Jeffrey D. Corbin, and Carla M. D'Antonio, *California Grasslands: Ecology and Management* (Berkeley: University of California Press, 2007); and James W. Bartolome, W. James Barry, Tom Griggs, and Peter Hopkinson, "Valley Grasslands," in Michael G. Barbour, Todd Keeler-Wolf, and Allan A. Schoenherr, *Terrestrial Vegetation of California* (Berkeley: University of California Press, 2007).

<sup>240</sup> Diarist Joseph Matthews described how his neighbor, Dr. Bitley, planted this aggressive species in the Dry Lake Valley just south of Bear Valley. Even after the field had been replanted to cereal grains, the persistent castor beans continued to come up. Fortunately, they were not well-adapted to the local environment, which is periodically afflicted by hard frosts. This, more than diligent weeding, finally eliminated all traces of Bitley's unfortunate experiment [Matthews, "Diary," Bancroft Library.]

circumvent this restriction, the practical limitations on what a family could actually cultivate, given the technology available at that time, were less malleable. With only hand implements, most families were not able to harvest more than about 80 acres each year and rarely planted more than this during the first homesteading generation (exceptions were made by wealthier homesteaders, who were able to hire additional labor). Mechanization was not introduced to Bear Valley until the latter part of the 1870s—almost a generation after the date of initial settlement—and did not play a significant part in the utilization of arable lands until the following century.

A platt map produced by GLO surveyor A.T. Herrmann in 1882 clearly shows the extent of cultivation in Bear Valley up to that time and reveals that it was still limited to specific areas, while other areas remained unexploited. This would change over the next generation, when all potentially arable land was turned to cultivation. One interesting fact indicated by the Herrmann survey is that many islands of native habitat still existed even at this late date. The character of these islands can only be guessed, but some idea is given by descriptions of similar environments made by Dry Lake homesteader Joseph Warren Matthews almost fifteen years earlier. He describes, for example, passing through native bunch grass prairie at the bottom of Hernandez Valley, noting its resilience to cold weather, "...for there is a kind of winter bunch grass up there which grows in spite of the cold."<sup>241</sup> Matthews does not identify the species, but it is almost certainly native and is greatly valued for its ability to sustain livestock, as Hernandez Valley had not yet come under the more intensive influence of agriculture by that time.

Pastoralism continued during this period, even though agriculture was the mainstay of the typical homesteader. After the collapse of the Spanish cattle industry in 1864, sheep became the preferred livestock species due to their greater resilience to drought conditions. They were no less hard on the environment, however, as Matthews suggests in his description of Bitterwater Valley, which lies south of Bear Valley. During the fall of 1871, he visited the area and wrote that "the valley out there looks very dreary now the sheep have eat all the feed off of it and it now lies roasting in the sun a perfect desert of dirt and dust."<sup>242</sup>

Between the combined effects of agriculture and intensive livestock grazing, most of the bottomlands in and around Bear Valley probably experienced a type conversion from native to predominantly annual exotic species by the end of the first generation. This influence would be concentrated within the principal valleys and tributary canyons, where the majority of agricultural settlement was located. The surrounding hills may have simultaneously experienced a diminishing impact as the focus of activity shifted from pastoralism to agriculture with the transition from Mexican ranching to American homesteading economies. One indication of this change was the apparent reduction of fire activity within the chaparral. Whereas John Breen had observed almost one major fire per week during the summer season seventeen years earlier, Joseph Matthews, an equally-careful observer of environmental conditions, did not observe a single wildfire for two years. Only in August of 1871 did he finally note two large conflagrations, one in the Diablo Range south of San Benito and the other in the Gabilans further north.<sup>243</sup>

Apart from the more obvious, direct impacts of agriculture on the natural environment, the early homesteaders had a profound effect on tree cover—especially oak woodland—throughout southern San Benito County. This impact was far more widespread than that of agricultural cultivation, because the homesteaders often ranged considerable distances in pursuit of woody resources. These were exploited for a variety of purposes, including lumber, honey and above all firewood. Lumber was needed in agriculture for the construction of houses, barns and fencing, with fencing probably accounting for the greatest proportion during the first few decades following the American conquest.

The continuing dominance of pastoralism even after this political transition resulted in passage of the Trespass Act of 1850, which required that agriculturalists shoulder the principal responsibility for protecting their fields from the depredations of free ranging livestock. This would change after the collapse of the livestock industry two decades later, when the legal burden was effectively reversed with passage of the No-Fence Law of 1872. But until that time, the construction of fencing was an important

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<sup>241</sup> Matthews, "Diary," Bancroft Library.

<sup>242</sup> *Ibid.*

<sup>243</sup> *Ibid.*

responsibility for every California farmer and required substantial economic outlays. Since barbed wire was not yet readily available in California, farmers had to erect expensive wooden fences and utilized the most easily-workable and resilient material, the straight-grained and rot-resistant wood of the coast redwood tree (*Sequoia sempervirens*), which was found in abundance in all the coastal districts from Santa Cruz north to the Oregon border. San Benito's South County lay just below the southern extent of the redwood range, but the coastal mountains bordering the northwestern corner of the San Juan Valley had abundant groves, and many South County homesteaders who had the good fortune to possess a wagon and a team of horses would supplement their income during the summer months, when dry conditions made dirt roads passable and the duties attendant on agriculture minimal. John Breen, the diarist whose family owned the Rancho San Lorenzo, was one example of a local settler who exploited this opportunity. Ben Bacon's neighbor, Nelson Page, was another. Page hauled all of the lumber to construct the Willow Creek Schoolhouse just north of Bear Valley. Although grey pine (*Pinus sabiniana*) was locally-abundant and relatively straight-grained and soft, it was far too knotty to be used even for such low-quality purposes as fencing.

The most common use for trees among the homesteaders was firewood. This was needed not only for warming the house but also for smoking pork, a mainstay of the homestead diet. Oak was the preferred type of wood for both purposes on account of its abundance and good burning qualities (as well as the flavor it imparts to smoked meats). The census returns from 1870 and 1880 suggest that eight cords of firewood per year was typical for most families. A cord represented 128 cubic feet of wood, or an eight foot long pile comprising four foot lengths stacked four feet high. A single mature valley oak (*Quercus lobata*) might supply all eight cords, though the more common blue oak (*Q. douglasii*), which is typically more moderate in size, might produce only a single cord, or less, from each tree. Thus, a crude estimate for the number of trees being cut each year would be one to eight per family, or an average of four. With approximately forty families estimated to live in the vicinity of Bear Valley during the latter half of the nineteenth century, this would amount to a loss of about 160 mature trees each year (not counting trees cut for other purposes like honey gathering).

But this loss was further exacerbated by the suppression of natural regeneration which resulted from increased predation on acorns by domestic swine and of seedlings by enhanced rodent populations. Pigs were an important component of early homesteads, although they provided little direct economic benefit. Most families kept between ten and fifteen animals and let them wander freely for wild mast (acorns). This produced a relatively low-quality product which was not competitive at market, so few families raised pork for anything but domestic consumption. Although swine production had a negligible impact on the agricultural economy of the South County, its impact on the natural environment may have been far more profound because of the animals' consumption of acorns. This suppressed the ability of oak woodland to regenerate even as mature trees were being cut down for firewood. The combined effect of increased predation and the reduced production of acorns resulting from fewer trees must have created a serious stress on oak woodland habitat.

A further, and perhaps more significant, stress was introduced at the same time with the explosive increase in the native rodent population, primarily ground squirrels (*Spermophilus beecheyi*) and pocket gophers (*Thomomys bottae*). These creatures benefitted from two unnatural changes introduced by the American settlers—the elimination or reduction of top predators like the California grizzly bear (*Ursus arctos* var. *californicus*) and the coyote (*Canis latrans*), and the proliferation of highly-nutritious, exotic annual grasses like wild oats (*Avena fatua*). The demise of the Chalon Indians, who hunted these fatty rodents, may also have contributed to this modification of the native ecology. Although it is impossible to estimate what a stable population for the rodents might have been prior to European contact, it is safe to say that post-contact populations increased dramatically. (This is supported by the efforts needed to control these species by the beginning of the twentieth century.)<sup>244</sup> The resulting

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<sup>244</sup> Joseph Grinnell and Joseph Dixon, *Natural History of the Ground Squirrels of California* (Sacramento: California State Printing Office, 1918); Joseph Dixon, *Control of the California Ground Squirrel*, Circ. No. 181 (Berkeley: University of California, Agricultural Experiment Station, 1917); and Joseph Dixon, *Control of the Pocket Gopher in California*, Bull. No. 340 (Berkeley: University of California, Agricultural Experiment Station, 1922).

pressure on oak regeneration must have been substantial, since both ground squirrels and pocket gophers preferentially feed on young oak seedlings.<sup>245</sup>

Studies done over a period of decades on blue oak and valley oak stands at the University of California's Hastings Natural History Reservation in Carmel Valley (not far from the Pinnacles) have supported these conclusions.<sup>246</sup> Researchers here have found that oak woodlands within the reservation have experienced almost no regeneration in the last century or more. The principle reason for this failure appears to be predation of oak seedlings by rodents such as pocket gophers.<sup>247</sup> If these conditions had always prevailed, the researchers reason, oak woodlands could never have emerged in the first place, so conditions must have changed since the present trees first germinated. Because many of these oaks are more than two centuries old, the changes which have suppressed their regeneration are likely associated with the transition from Indigenous to Euro-American dominance on the landscape. Although the most salient of these changes was the modification of native burning practices, equally significant were the introduction of exotic vegetation and the suppression or elimination of top predators, both of which allowed the rodent population to increase, overwhelming the ability of oak seedlings to survive.<sup>248</sup> The failure of these seedlings was further exacerbated by competition for limited moisture by introduced annuals and the suffocating canopy of dead thatch which they deposit every summer.<sup>249</sup> In the absence of fire, this thatch simply accumulates on the ground and stymies the development of young germinants emerging underneath.

After the introduction of swine during the homesteading period, far fewer acorns than before European contact would have survived to produce viable germinants. Those that did would now succumb to the increasing pressure from rodent predation. Ironically, all three pressures on the preservation and regeneration of oak woodland are related to pigs (though other factors were also involved)—the cutting of firewood was motivated in large part by the need to smoke pork, which requires a large supply of oak during all seasons of the year; the reduction of the oak seed bank resulted from a combination of cutting mature trees, which supply the acorns, and the homesteaders' practice of grazing swine on wild mast; while the greatest pressure, the increasing number of native rodents who feed on oak seedlings, resulted in part from the elimination of predators like the grizzly bear, which the homesteaders killed because of the animal's appetite for domestic swine.

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The second and third generation of homesteading families in southern San Benito County saw increasing consolidation of local properties, with fewer families farming ever greater areas of land. As the minority of large farmers became more prosperous, they were able to hire laborers—often neighbors from less prosperous farms—to manage their increased acreage, but the introduction of mechanization

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<sup>245</sup> James R. Griffin, "Animal Damage to Valley Oak Acorns and Seedlings, Carmel Valley, California," in *Proceedings of the Symposium on the Ecology, Management, and Utilization of California Oaks (General Technical Report PSW-044)*, ed. Timothy R. Plumb (Albany, CA: U.S. Dept. of Agriculture, Pacific Southwest Research Station, 1980); and Tyson H. Holmes, "Botanical Trends in Northern California Oak Woodland," *Rangelands* 12.1 (1990): 3-7.

<sup>246</sup> Keith L. White, "Structure and Composition of Foothill Woodland in Central Coastal California," *Ecology* 47.2 (1966): 229-37; James R. Griffin, "Oak Regeneration in the Upper Carmel Valley, California," *Ecology* 52.5 (1971): 862-68; and Griffin, "Regeneration in Quercus lobata Savannas, Santa Lucia Mountains, California," *American Midland Naturalist* 95.2 (1976): 422-35.

<sup>247</sup> Although this conclusion was made after excluding larger grazers like deer and swine from the study area. Under normal conditions, deer would have competed with rodents for seedlings and augmented the effects of predation, while swine would have consumed many of acorns before they even had a chance to sprout.

<sup>248</sup> Griffin, "Animal Damage" (1980); and Holmes, "Botanical Trends" (1990).

<sup>249</sup> Frank W. Davis, et al., "Factors Affecting Seedling Survivorship of Blue Oak (*Quercus douglasii* H.&A.) in Central California," in *Proceedings of the Symposium on Oak Woodlands and Hardwood Rangeland Management (General Technical Report PSW-126)*, ed. Richard B. Standiford (Albany, CA: U.S. Dept. of Agriculture, Pacific Southwest Research Station, 1991).



did even more to facilitate this change in scale. The gasoline-powered tractor made its debut in the first decade of the twentieth century, with the Fordson F Series light tractor appearing in 1917, just in time for an agricultural boom which was stimulated by war-time demand for food commodities. The Fordson was mass-produced by the Henry Ford Company as the agricultural equivalent to its already-famous Model T passenger car and proved to be nearly as popular. Nearly a quarter of all California farms had acquired tractors by 1925.

While mechanization made it possible to cultivate more acres, two characteristics of agriculture in southern San Benito County made it necessary. The first was market pressure. As the second and third generation of local farmers produced increasingly for sale rather than subsistence, they planted according to the price they could receive rather than goods they needed. They also concentrated on a handful of crops, such as cereal grains (wheat and barley) and hay. These grew well in the arid environment, but were also relatively low in value and required extensive acreage to be profitable. As the market price for these commodities began to decline after 1920, local farmers needed to plant increasingly more acreage just to keep up with expenses. During the late nineteenth century, about 200 acres had been needed to support one family in this part of California, but by 1930, after a decade of declining values, this figure had doubled to 400 acres.<sup>250</sup>

A second factor driving farmers in this region to increase their acreage was associated with the techniques developed for dry farming. These were being introduced throughout much of the arid West during the first few decades of the twentieth century.<sup>251</sup> By 1913, California farmers had become vigorous supporters of the dry farming method, which included fallowing at least one-third of a farm's arable land during the summer to increase moisture retention in the soil.<sup>252</sup> In order to maintain the same levels of production as previously—now an economic necessity—the farmer would have to increase his cultivated acreage by at least one-third, and often as much as two-thirds. This means that the total acreage needed to support an agricultural family in southern San Benito County by 1930 was closer to 1000 acres, and probably more if some of the farm's land was being used for pasturage as was increasingly common by this time.

The GLO land survey from 1882 indicated that cultivation in Bear Valley was limited to discrete pockets of land with substantial intervening areas left unaffected. Over the subsequent generation, a combination of market pressure and new technologies altered this pattern, increasing the extent of cultivation until it encompassed nearly all of the arable bottomlands. By the 1920s, mechanization was making it possible to extend the cultivable perimeter into the surrounding hills (though early tractors were notoriously unstable on slopes) and even to begin clearing chaparral.<sup>253</sup> Cultivation probably reached its greatest extent within the Pinnacles bottomlands during Ben Bacon's lifetime. It may not be coincidental that his property had reached approximately 2000 acres by 1937, as this was about the minimum acreage needed to remain economically productive. This expansion of agricultural development was probably the most significant change to occur during this generation and had the greatest impact on the land. Despite the steady growth of Ben Bacon's ranch on the Pinnacles bottomlands during this period, there is no evidence that Oliver Bacon's property in McCabe Canyon was

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<sup>250</sup> Elvin Hatch, "Stratification in a Rural California Community," *Agricultural History* 49.1 (1975): 21-38.

<sup>251</sup> Mary W.M. Hargreaves, "Dry-Farming in Retrospect," *Agricultural History* 22.1 (1948): 39-56; Herbert Quick, "Desert Farming Without Irrigation..." *World's Work* 12 (Aug., 1906): 7886-93; and J.L. Donahue, "Farming Without Water: How the Great American Desert is Being Reclaimed Without the Aid of Irrigation," *World To-Day* 11 (Aug., 1906): 862-68.

<sup>252</sup> E.R. Parson, "Dry-Farming the Ideal for California Crops: An Unanswerable Argument for the Adoption of the New Method," *Dry-Farming and Rural Homes* 6.12 (1913): 9-10; Charles B. Lipmon, "California Tillage Methods," *Dry-Farming and Rural Homes* 7.5 (1913): 174-77; and Samuel N. Dicken, "Dry Farming in the San Joaquin, California," *Economic Geography* 8.1 (1932): 94-99.

<sup>253</sup> The earliest recorded use of a tractor for this purpose in Bear Valley dates from 1925, when homesteader Russell Bourke attached a blade to his Fordson and used the machine to clear brush from his small farm on North Chalone Creek. Evidence of this clearing can still be seen today, as can the ruins of Bourke's tractor at his homestead site (CA-SBN-122H). [Hermansen to Dir. (NPS), Feb. 9, 1925, NARA, RG 79, Box 336, College Park, MD.]

ever cultivated, though it was used for livestock grazing. [Note: this section could be supported and expanded with data from tax rolls].

## 5. Environmental Consequences of Post-War Landscape Management

Although the objectives of the Range Improvement Program and the National Monument's prescribed fire program were very different, their results often proved similar. In both cases, chaparral was type-converted to grassland. This was the result that ranchers and rangeland managers sought, but it was not what Park Service resource managers wanted. Park managers hoped to produce a healthier overall chaparral environment, not to eliminate this vegetation type altogether. Their objective was to thin old brush and to create a heterogeneous mosaic of different-aged stands with more biologically-rich ecotones. They believed they could achieve these goals through the frequent application of prescription burns, but Park resource managers were operating from the mistaken assumption that chaparral is fire-dependent and needs to burn to remain healthy. In part, this was a result of the persistence of ecologist Frederic Clements' climax theory of plant communities. William Cooper had applied Clements' theory to local conditions in his 1922 study of the California chaparral, and this had remained the conceptual basis of the monument's 1976 Natural Resources Management Plan and the Fire Management Plan which had evolved with it. Park managers had adopted Cooper's argument that chaparral is a subclimax vegetative community and remains dominant only through the action of fire, which arrests the natural succession to a different climax community.<sup>254</sup>

The assumption of fire-dependency was also a result of misapplying principles derived from montane coniferous forests, where Harold Biswell had done much of his research on prescription burning, to the chaparral. It was assumed that the relatively cool ground fires associated with a short fire-return interval in the former environment could (and should) be replicated in the latter. But chaparral fires generally burn hot and consume the entire brush canopy. Although many species can survive intermittent canopy fires and will regenerate through crown sprouting—for example, chamise (*Adenostoma fasciculatum*)—this nevertheless causes the plant considerable stress. If the fire-return interval is too short, the plant will exhaust its resources and die. Other species, like ceanothus (for example, *Ceanothus cuneatus*) and some manzanitas (for example, *Arctostaphylos glauca*), have no ability to survive a fire at all, but their dormant seeds, which have accumulated over years in dense seeds banks, are stimulated to germinate by heat or chemicals in smoke, and the population can be restored in this manner after a fire, possibly even increasing in extent of area. But again, if the fire-return interval is too short, the seed bank can be exhausted before seedlings have matured sufficiently to replenish it, and the population will be extirpated. These responses all suggest that chaparral is not so much fire-dependent as it is *adapted* to a particular fire regime. The average fire-return interval of 40 years determined by Greenlee and Moldenke represents what is likely a sustainable regime, but the frequent prescription burns conducted by the Park Service during the 1980s proved far from it.<sup>255</sup> The frequency of these burns eliminated chaparral species and resulted in the subsequent invasion of exotic annuals like cheatgrass (*Bromus tectorum*).<sup>256</sup>

In response to these observed effects and to the conclusions of the Greenlee and Moldenke fire history, the Park Service has ceased burning in the chaparral at Pinnacles, but some important questions remain unanswered. It is clear now that the fire regime which would best maintain this habitat must represent a fire-return interval of at least 30 to 40 years, the frequency which Greenlee and Moldenke found to be average for the period they investigated. (Studies in Southern California have found the natural fire-return interval for chaparral to range from 40 to 100 years).<sup>257</sup> This is the approximate rate of occurrence which might be expected from natural ignition sources, assuming that fires are allowed to

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<sup>254</sup> Frederic Clements, *Plant Succession: An Analysis of the Development of Vegetation* (Washington, DC: Carnegie Institution, 1916); Cooper, *Broad-Sclerophyll Vegetation* (1922); and U.S. Dept. of the Interior, *Resources Management Plan, Pinnacles National Monument* (Paicines, CA: National Park Service, Pinnacles National Monument, 1976).

<sup>255</sup> Jon E. Keeley, "Chaparral and Fire," *Frémontia* 35.4 (2007): 20; and Keeley, "Fire Management of California Shrubland Landscapes," *Environmental Management* 29.3 (2002): 398.

<sup>256</sup> Denise Louie, Chief of Resources, Pinnacles National Park, convers. with author, 2008.

<sup>257</sup> *Fire Management Plan, Pinnacles National Monument* (2007), p. 27.

move unimpeded over a wide range of territory in the absence of suppression activities. The fact that Greenlee and Moldenke found the average return interval to be at the low end of what is now considered natural may reflect the influence of anthropogenic ignitions during the historic period, which they admit account for the majority of recent fires. But the Greenlee and Moldenke report does not provide any information regarding fire occurrence prior to the historic period (and the fire scar studies conducted at Pinnacles were unable to go back any further than 1900). This means that it is impossible to assess the possible impact of pre-contact Indian practices on the natural fire regime within the Chalone Creek watershed based on these sources alone.

Most burning conducted by the Chalon Indians probably occurred in the oak woodlands, grassland and riparian corridors where their populations were concentrated. (The current Fire Management Plan for Pinnacles proposes targeting these same habitats for future prescribed burns).<sup>258</sup> But Indian burning may have had some limited but nonetheless significant effects on the chaparral. It is unlikely that large areas of brush were intentionally burned, except perhaps by game hunters on a sporadic basis, which would have had little long-term effect. But it is very likely that small areas of brush closer to valley and canyon occupation sites were burned in an ecologically-significant way. Anthropological studies conducted in the Santa Monica Mountains of Southern California—also a chaparral-dominated environment—have shown that local Indian groups may have systematically burned small patches of brush to create shifting mosaics in varying stages of succession.<sup>259</sup> This practice would have encouraged the maximum diversity of biological resources, but it may also have resulted in type-conversion of portions of the chaparral, pushing back the margins of this vegetation relative to valley grasslands and oak woodland while opening up corridors and clearings within it. If this was also the case in the Chalon culture area prior to European contact, then the demise of indigenous management practices following the Chalon's removal might have released the chaparral from the effects of frequent burning and resulted in its expansion back toward the valley bottoms. Openings that may have punctuated an otherwise uniform cover of dense brush would have filled in as well.

Although Euro-American settlers also burned, their fires were confined to the principal bottomlands where agriculture was typically practiced, and, unless they escaped, these fires would not have included smaller side canyons such as McCabe. The indigenous peoples, on the other hand, valued these areas at least as much as the broad open grasslands which would later become agricultural fields. They would have managed them with equal intensity on account of the many food and fiber sources they held and likely burned them as well. The relatively diminished attention these areas received following the removal of their indigenous inhabitants may have resulted in pronounced landscape changes during the transition from Late Period Native American occupation to early Euro-American settlement. These changes would have peaked during the substantial interval—lasting more than half-a-century—when few if any humans occupied the vicinity of the study area, and this landscape would have begun to revert to wilderness. This was the condition which the earliest Bear Valley homesteaders, such as the Bacons, would have encountered when they arrived in 1865.

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<sup>258</sup> *Ibid.*

<sup>259</sup> Julia E. Hammett, "Ecology of Sedentary Societies without Agriculture: Paleoethnobotanical Indicators from Native California," doctoral diss., University of North Carolina, Chapel Hill, 1991; King, "Fuel Use and Resource Management" (1993).

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